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Creating Employee Self-Service Portal Concept

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Bachelor of Engineering

Industrial Management

Thesis

11.4.2016

Helsinki Metropolia University of Applied Sciences

Author Title Number of Pages Date	Atte Uppala Creating Employee Self-Service Portal Concept 85 pages + 4 appendices 11.4.2016
Degree	Bachelor of Engineering
Degree Programme	Industrial Management
Specialisation option	International ICT business
Instructor(s)	Nina Hellman, Principal Lecturer Business Executive, Sofigate Advisor, Sofigate

The objective of this study was to create an employee self-service portal concept for Sofigate. The portal concept consists of two different proposals, which address the main areas, Sofigate needed to improve with regard to employee self-service portals. The first proposal produced during this study is a service design process for designing and creating user friendly employee self-service portals effectively with the customers. The second proposal is an example employee self-service portal user interface design, which follows usability best practices.

This study was divided into three main sections in order to achieve the goal of creating an employee self-service portal concept successfully.

First, theory related to service design and usability best practices was studied. A conceptual framework was formed based on those best practices.

Secondly, a current state analysis was conducted covering the areas of both proposals. The current state analysis was carried out by interviewing four Sofigate project managers, examining internal documentation and by conducting existing customer portal usability assessments.

Finally, a new service design process and best practice sample employee self-service portal user interface design proposals were formed based on the comparison between the key findings from the conceptual framework and current state analysis.

As a result of the new employee self-service portal concept that was produced for this thesis, Sofigate can now design and create employee self-service portals more effectively by following predefined steps of the new service design process. Furthermore, they can utilize portal user interface examples, when designing portals with the customers for achieving higher quality in portal usability.

Keywords	usability, usability evaluation, portal, employee self-service portal, ServiceNow, service design
Tekijä Otsikko Sivumäärä Aika	Atte Uppala Työntekijöiden itsepalveluportaalikonseptin luominen 85 sivua + 4 liitettä 11.4.2016
Tutkinto	Insinööri (AMK)
Koulutusohjelma	Tuotantotalous
Suuntautumisvaihtoehto	Kansainvälinen ICT-liiketoiminta
Ohjaajat	Nina Hellman, Lehtori Business Executive, Sofigate Advisor, Sofigate

Insinöörityön tavoitteena oli luoda työntekijöiden itsepalveluportaalikonsepti Sofigatelle. Portaalikonsepti koostuu kahdesta erinäisestä ehdotuksesta, mitkä kattavat ne alueet, mitkä ovat haastavia Sofigatelle itsepalveluportaalikontekstissa. Ensimmäinen ehdotus on palvelumuotoiluprosessi, mikä mahdollistaa käyttäjäystävällisten itsepalveluportaalien suunnittelun sekä luomisen tehokkaasti asiakkaan kanssa. Toinen ehdotus on esimerkki käyttöliittymähahmotelma työntekijöiden itsepalveluportaalista, mikä hyödyntää käytettävyyden parhaita käytäntöjä.

Insinöörityö jaettiin kolmeen eri pääosa-alueeseen, jotta tavoite työntekijöiden itsepalveluportaalien konseptoinnista saavutettaisiin.

Ensin teoriaa liittyen palvelumuotoiluun sekä käytettävyyden parhaisiin käytäntöihin opiskeltiin. Teoreettinen viitekehys muodostettiin perustuen edellä mainittuihin parhaisiin käytäntöihin.

Toiseksi suoritettiin nykytila-analyysi, mikä kattoi molempien ehdotusten osa-alueet. Nykytila-analyysi suoritettiin haastattelemalla neljää eri Sofigaten projektipäällikköä, tutkimalla yrityksen sisäistä dokumentaatiota sekä suorittamalla Sofigaten nykyisille asiakkaille itsepalveluportaaliarviointeja arvioiden erilaisten portaalien elementtien käytettävyyttä.

Lopuksi uusi palvelumuotoiluprosessi sekä käytettävyyden parhaisiin käytäntöihin nojaava työntekijöiden itsepalveluportaalin käyttöliittymähahmotelma muodostettiin vertailemalla teoreettisen viitekehyksen sekä nykytila-analyysin välisiä keskeisimpiä huomioita.

Uuden työntekijöiden itsepalveluportaalikonseptin tuloksena, Sofigate voi suunnitella sekä luoda itsepalveluportaaleja entistä tehokkaammin seuraamalla uuden palvelumuotoiluprosessin ennalta määriteltyjä vaiheita. Lisäksi he voivat hyödyntää portaalin käyttöliittymähahmotelmaa suunnitellessa portaaleja asiakkaiden kanssa. Tämä mahdollistaa korkeamman laadun portaalin käytettävyydessä.

Avainsanat	käytettävyys, käytettävyyden arviointi, portaali, työntekijöiden itsepalveluportaali, ServiceNow, palvelumuotoilu

Contents

1 Introduction

This study concentrates on creating a new end-user self-service portal concept for the case company Sofigate Services Oy. The new portal concept will enable a faster and more effective portal design phase with the customer.

1.0 Background

Self-Service portals are content management solutions and they are made for end-users for allowing easier navigation within the system. The study focuses on creating a concept for employee self-service portals, which incorporates two different proposals. The first proposal is a new process for designing and creating employee self-service portals effectively with the customer. The second proposal is an example user interface design of best practice employee self-service portal. Employee self-service portals are created onto ServiceNow, which is an IT Service Management tool.

Sofigate Oy is an IT management service provider company, which operates in Finland and Sweden. Sofigate Oy offers their customers different competence in various areas of IT management. Currently Sofigate Oy employs over 200 employees.

Sofigate Services Oy is a subsidiary of Sofigate Oy. It offers their customers boost and automation on their IT service management processes using ServiceNow and Remedyforce IT service management tools. Sofigate Services Oy is a partner of ServiceNow and BMC Software. Sofigate Services Oy resells and takes part into the implementation and maintenance of the tools. This study is made mainly for Sofigate Services Oy, since it will serve their purposes better.

Currently employee self-service portal projects employ various employees at Sofigate. The design process of the portal lacks a formal design concept, which causes the design phase to last for too long and the portal specifications change several times during the project. Enhancing the portal design phase would increase the results of the project, customer satisfaction and effectiveness of the design workshops with the customer.

1.1 Business Challenge and Goals of the Study

The employees of Sofigate find designing employee self-service portals together with the customers often too complex and time consuming. Sofigate does not have any best practice for designing comprehensive employee self-service portals, which would be easy to use and where the user could find their desired services easily. Additionally, Sofigate does not have any visual examples of portals to show their customers. Therefore, the customers do not know which kind of elements the portal should contain.

The objective of the study is to create a new self-service portal concept for Sofigate. The concept will include an enhanced process of designing comprehensive employee self-service portals for the customers of Sofigate. Additionally, the concept will contain visual examples of best practice employee self-service portal, which follows usability best practices and contains the most common elements included to employee self-service portal. Those visual examples will be created for achieving a better understanding of effective and user friendly portals among the customers of Sofigate. The concept will be produced by defining the current process for conducting employee self-service portal projects and by reviewing existing customer self-service portals, combining their key assets and comparing them to employee self-service portal best practices. Overall creating employee self-service portal concept enables portal projects to be carried out more efficiently, achieving higher customer satisfaction and better employee self-service portals.

This study focuses on answering the following main question and its sub-questions:

- How to create an employee self-service portal concept successfully?
    a. How to design and create employee self-service portals successfully together with the customer?
    b. How to improve the usability of employee self-service portals?

The outcome of the study is to successfully produce a new employee self-service portal concept.

1.2 Research Design

This case study uses a qualitative case study strategy. Figure 1 illustrates the research design of this study:

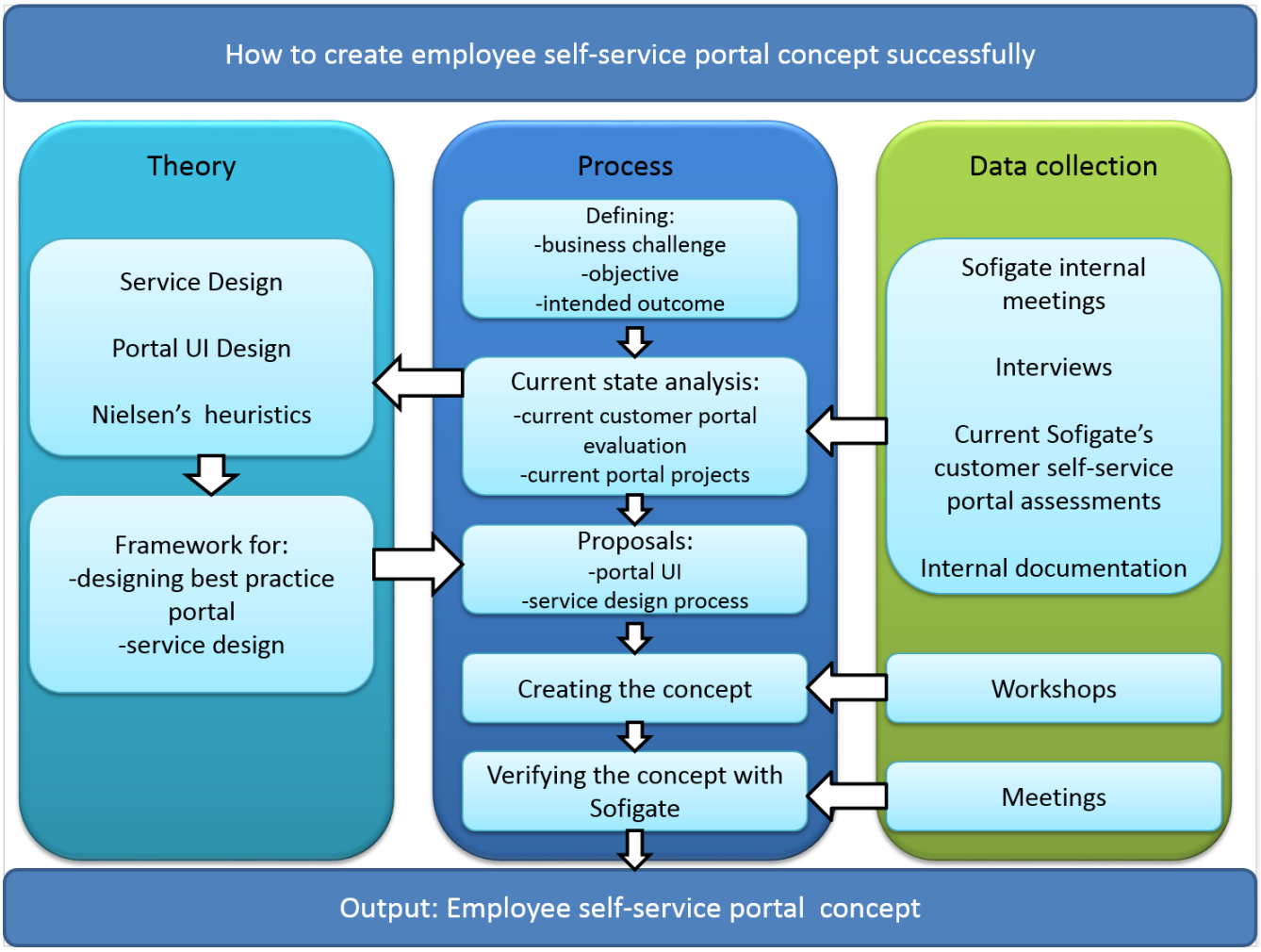

Figure 1. Research design of this study.

As Figure 1 shows, this study process starts by defining business challenge, objective and intended outcome. Secondly, theory related to this study is studied, including service design, portal usability best practices and Nielsen's heuristics. Thirdly, the current state analysis is carried out by conducting assessments for Sofigate's existing customer employee self-service portals, interviewing personnel of Sofigate and by examining internal documentation related to employee self-service portals. Fourthly, the employee self-service portal concept is created based on the findings of the current state analysis and

theory. Fifthly, the concept is presented in the workshops and developed further based on feedback. Finally, the concept is verified with Sofigate's representatives.

1.3 Data Collection and Analysis Methods

The data used in the thesis is collected through several data sources, including: interview with the personnel of Sofigate, examination of customer's existing self-service portals and examining Sofigate's internal documentation related to employee self-service portals. The results of the data collection have been utilized when making the current state analysis and the proposals regarding the service design process and user interface design.

Interviews and meetings

The data collection of this study starts by interviewing Sofigate's representatives for defining the process and specifying how the portals have currently been designed and created. Additionally, Sofigate representatives were asked to list the main elements of the portal, which the customers typically want to place to portals. The questions presented to Sofigate representatives are listed below:

1. How are customer portals being planned? Does Sofigate create design documentation? Who designs the portals and how?
2. How design process is typically handled with the customer?
3. Which are the most typical elements and functionalities that customers want to their portals?
4. What kind of things are challenging for you and customers, when designing portals?
5. How do customers see the importance of portals?
6. Which kind of professionals are typically present in the designing phase from Sofigate and customer side?

The interview persons were selected on the basis of, who has been working with employee self-service portal projects. Data from the meetings was documented in memos. Sofigate representatives most typical answers for each question presented above can

be found in Section 3.0. Additionally, more detailed questions and answers for each interview can be found from the memos in the appendices. The data collection from the meetings and interviews of this thesis is illustrated in Table 1 below.

Table 1. Data collection from interviews and meetings.

Data type	Date	Present	Key issues	Documentation
Interview	15.02.2016	Sofigate project manager	Current service design process	Interview 1 memo
Interview	15.02.2016	Sofigate project manager	Current service design process	Interview 2 memo
Interview	16.02.2016	Sofigate project manager	Current service design process	Interview 3 memo
Interview	16.02.2016	Sofigate project manager	Current service design process	Interview 4 memo
Workshop	14.03.2016	Service designer and portal expert	New portal service process	Figure 20
Workshop	17.03.2016	Portal expert	New portal illustration	Figures 28, 29, 30, 32
Meeting	08.04.2016	Business executive and advisor	Validation of the project proposals and results	Section 4.3

As seen in Table 1, this thesis included four project manager interviews for defining the current service design process. Additionally, two workshops were held for verifying and enhancing the two proposals that were included to the employee self-service portal concept. The interview results were utilized for defining how the employee self-service portal projects are handled currently. Furthermore, the key points were utilized, when the new service design process was created. The interview results also helped to define the key challenges in the portal projects. Those challenges were taken into account, when creating the new service design process. After the final proposals were created, they were validated by Sofigate instructors. Based on the feedback, modifications to the proposals were made.

Customer self-service portal assessments

Examination of the existing customer employee self-service portal was one of the main data source of this study. Self-service portal assessments were made for two different customer employee self-service portals and the key points of the assessments were listed. The criteria used to select the two customer employee self-service portals for assessments was that one of the customer portals has been designed by the personnel of Sofigate and the other designed by a marketing agency.

Internal documentation

Internal documentation was also examined to find possible ideas for improvement in building employee self-service portals. Table 2 provides details of the internal documentation that was analysed.

Table 2. Internal documentation analysed in the study.

Name of the document	Amount	Description
Company A employee self-service portal specification documentation	41 pages	Portal documentation including: portal elements, portal visuals and portal processes
Company B employee self-service portal specification documentation	25 pages	Portal documentation including: portal elements, portal visuals and portal processes
Company A Development Project Plan	28 slides	Project plan including: work packages, work amounts, schedule, project practices

As seen in Table 2, internal documentation incorporates mainly employee self-service portal specification documentation and project documentation. These documentations were utilized for indicating the most important objects and functionalities used in portals and defining Sofigate's practices in their current and past self-service portal projects.

2 Best Practices for Employee Self-Service Portals

This section provides an overview of the best practices related to creating employee self-service portals. Since the thesis is focused on concepting employee self-service portals, the main subjects are service design and usability best practices related to websites and portals. Additionally, information related to self-service, employee self-service portals and ServiceNow will also be provided.

Sources related to service design are not only related to IT service design, so they can be utilized in an employee self-service portal context as well. Usability sources often describe websites, but they can also be utilized in portal context. Sources related to ServiceNow and its employee self-service portals are blogs and ServiceNow Wiki, which is a trustworthy source, maintained by ServiceNow experts.

2.0 Self-Service and its Benefits

Self-service can be described as a process where a customer or employee participates the provision of a product or service partially or entirely. For instance, picking the components for a cupboard from IKEA shelves and assembling them by yourself or fixing a vacuum cleaner by reading its manual to fix the broken component by yourself are good examples. In the context of IT self-service can be generally categorized into two different segments: employee self-service (ESS) and customer self-service (CSS). Employee self-service is specified to support employee's online transactions and customer self-service is specified for supporting customer's online transactions instead. (Castro, D., Atkinson R., Ezell, S. 2010)

Self-service has two key benefits for its users and business: time and money. Self-service enables its users to perform various transactions and gain immediate access to the company's information without having to wait for email or phone responses. Self-service technologies may be available for 24 hours a day, seven days a week, which will enable its users to have unlimited access for services or products. Self-service can reduce costs significantly. Organizations do not need to use their entire staff for helping users or consumers to perform simple tasks. For instance in the banking industry, the average cost for self-service online transaction is only 0.20 $ and average cost at a branch location is

4.25 $. When self-service is optimized, it can make its users feel empowered, when customer can control the encounter with a service or a product. Therefore, the users may be willing to use self-service rather than contacting the service or product provider. To achieve this state, service or product providers need to offer their customer or employees an optimized self-service portal. (Castro, D., Atkinson R., Ezell, S. 2010)

2.1 Employee Self-Service Portal

This thesis concentrates on employee self-service portals (ESS). Employee self-service portals are web-based applications or platforms, which provide specific organizations employee's access to diverse information and ability to perform different transactions. Employee self-service portals are used for empowering employees to perform various job-related activities such as updating their personal information, contacting and managing support tickets, accessing company information and various other activities. With self-service portals, those activities can be committed without any interaction with a representative of a company. (Rouse, M.)

Employee self-service portals may be available for employees through various sources, from the company's intranet or through specialized kiosks that are included in the company's network. Employee self-service portals are commonly included in a larger application such as enterprise resource planning system (ERP) or in this case an IT management and automation tool called ServiceNow. (Rouse, M.)

2.2 ServiceNow

This thesis concentrates on employee self-service portals created onto ServiceNow, since Sofigate offers their customers services regarding this product. ServiceNow is a cloud based Software as a Service (SaaS) solution for managing and automating IT Services. As a cloud based solution, ServiceNow can be accessed anywhere by using HTTP protocol, which also reduces company's infrastructure maintenance requirements significantly. ServiceNow utilizes Service Automation Platform which includes modular components. Those modular components are illustrated in Figure 2 below. (Ortiz, A. 2014)

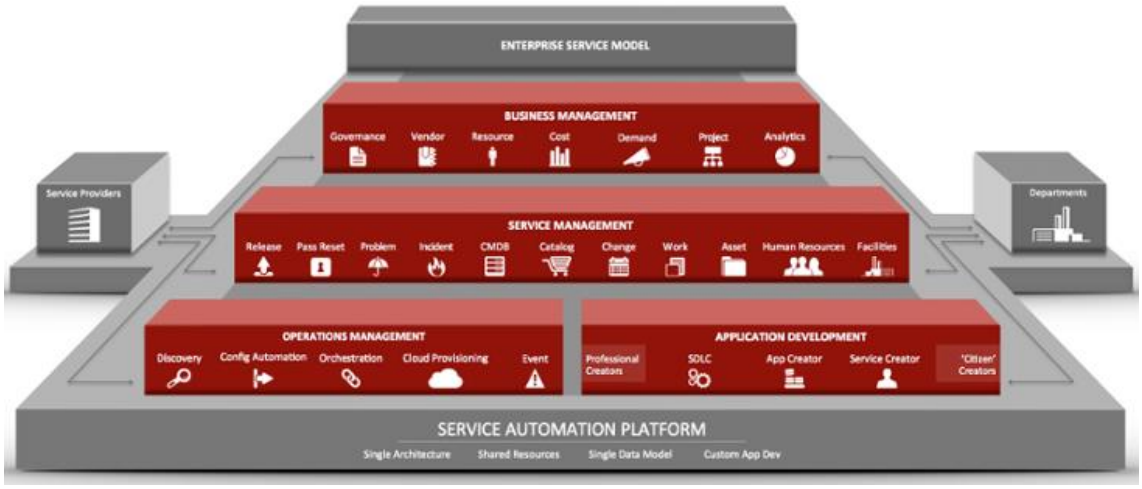

Figure 2. ServiceNow products overview (Ortiz, A. 2014).

As seen in Figure 2, ServiceNow offers their automation and managing services to various areas. The main areas are Business Management, Service Management, Operations Management and Application Development. ServiceNow is designed around Information Technology Infrastructure Library (ITIL) principles. ServiceNow covers all the areas of ITIL and follows its principles. (Ortiz, A. 2014)

ServiceNow utilizes the functionality to create customized employee self-service portals. Portals can be created, customized and maintained from the Content Management System application.

2.2.1 Content Management System Application

Content management system (CMS) application enables companies to build custom user interface on the ServiceNow platform. The main feature of this application is to create employee self-service portals, so it can be considered as a tool for creating employee self-service portals via ServiceNow. CMS application typically requires a system administrator or web-developer for building up the portal features. (ServiceNow Wiki)

CMS application enables developers to build portals matching company's look and feel. The application allows developers to build customized layouts, styles, pages, navigation, etc. ServiceNow offers their customers an "out-of-box" portal, which is included in the

base system. The employee self-service portal offered by ServiceNow is illustrated in Figure 3 below.

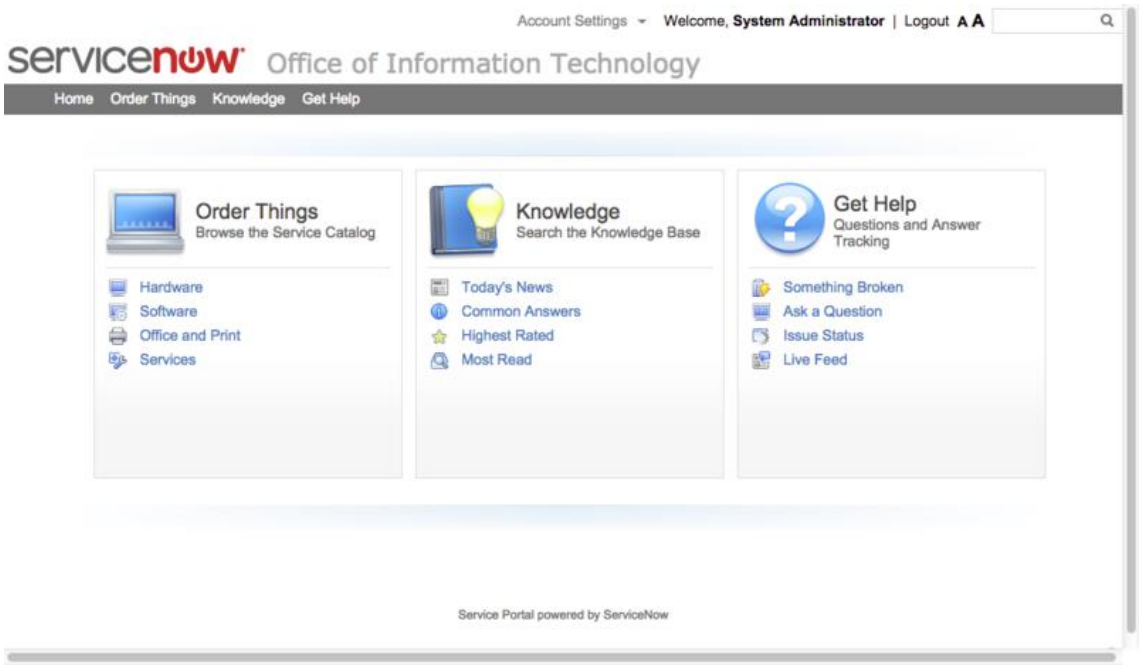

Figure 3. ServiceNow's portal included to the system.

As seen in Figure 3, ServiceNow offers a really simple and general look and feel of the employee self-service portal. The portal offered by ServiceNow consists of functionalities that usually incorporate to self-service portals: ordering things from the service catalogue, searching knowledge from the knowledge base and submitting tickets to support. With more advanced coding and ServiceNow administration knowledge, employee self-service portal features and visuals can be customized even further. Figures 4 and 5 illustrate customized and more advanced employee self-service portals.

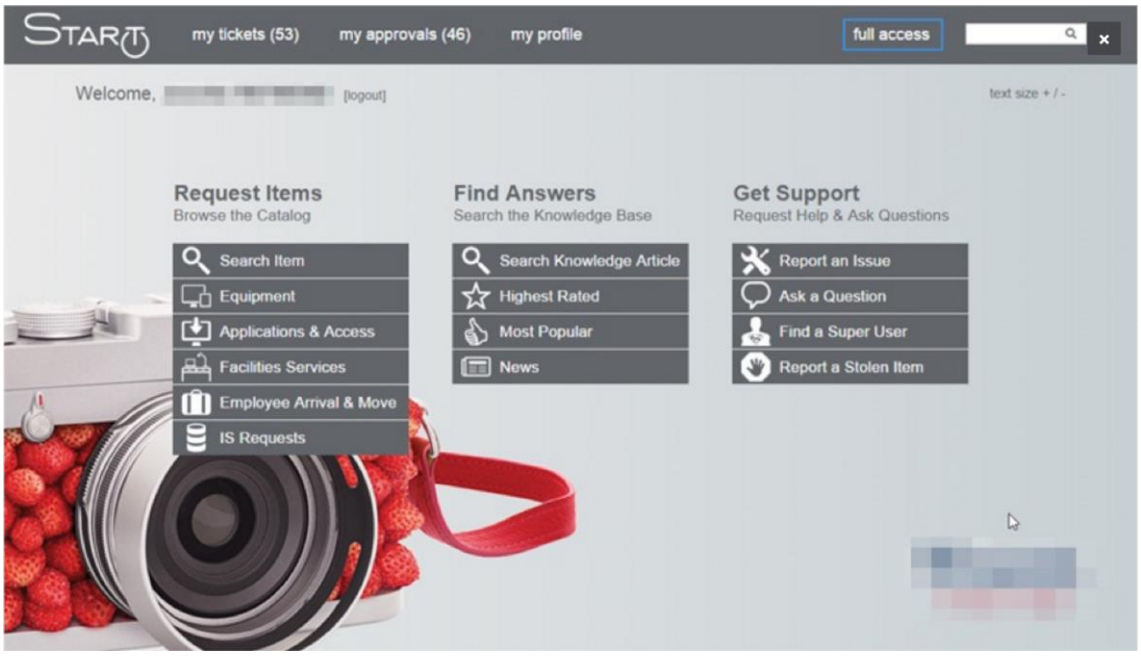

Figure 4. First more advanced employee self-service portal example. (Huynh, X. 2015).

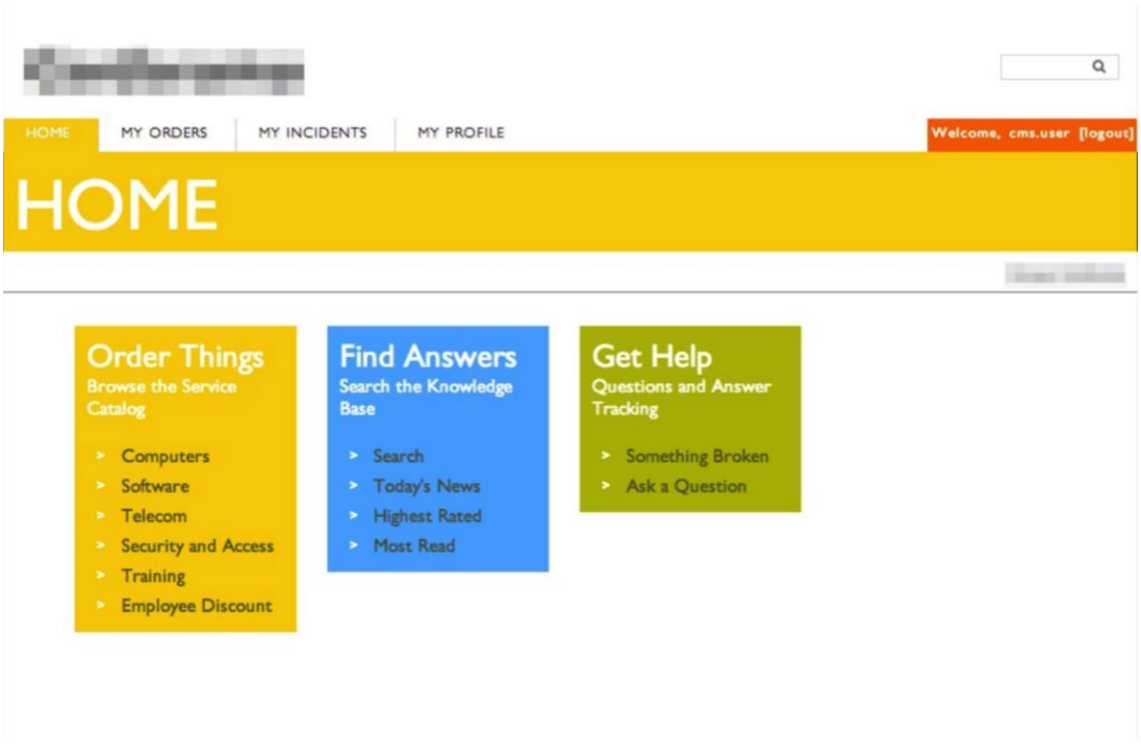

Figure 5. Second more advanced employee self-service portal example (Huynh, X. 2015).

As seen in Figures 4 and 5 above, employee self-service portals have been further modified from the original ServiceNow's self-service portal. The portals are simple, easy to use and follow the guidelines of self-service portal best practices. (Huynh, X. 2015)

2.3 Service Design

Service design enables organizations to recognize the strategic potential and capabilities of current services, develop them and innovate entirely new services. Service design is about combining classical design procedures and traditional service development. The goal of service design is to create services, which are sustainable financially, socially and ecologically. (Tuulaniemi, J. 2011: 126-127)

Service designers utilize the aspect of users, when designing services. Service designing can simplify complex services, enabling them to provide more value and efficiency to business and the users of the service. When services are designed properly, user satisfaction is higher and users will more likely use the service. For instance, users will use employee self-service portal rather than calling to support to solve their problems, which reduces the costs for the organization significantly. Furthermore, service design enables to place metrics into the service for monitoring the performance and user satisfaction for example. (Polaine, A., Lovlie, L., Reason, B. 2013: 18-19)

2.3.1 Service Design Process

A service design process follows the principles of a basic problem solving process. Recurring events can be formalized into a process, which enables personnel to follow predefined chain of actions instead of creating a new one every time. A service design process allows the personnel to deal with more creative tasks than routine tasks (Tuulaniemi, J. 2011: 126). A service design process is illustrated in Figure 6 below.

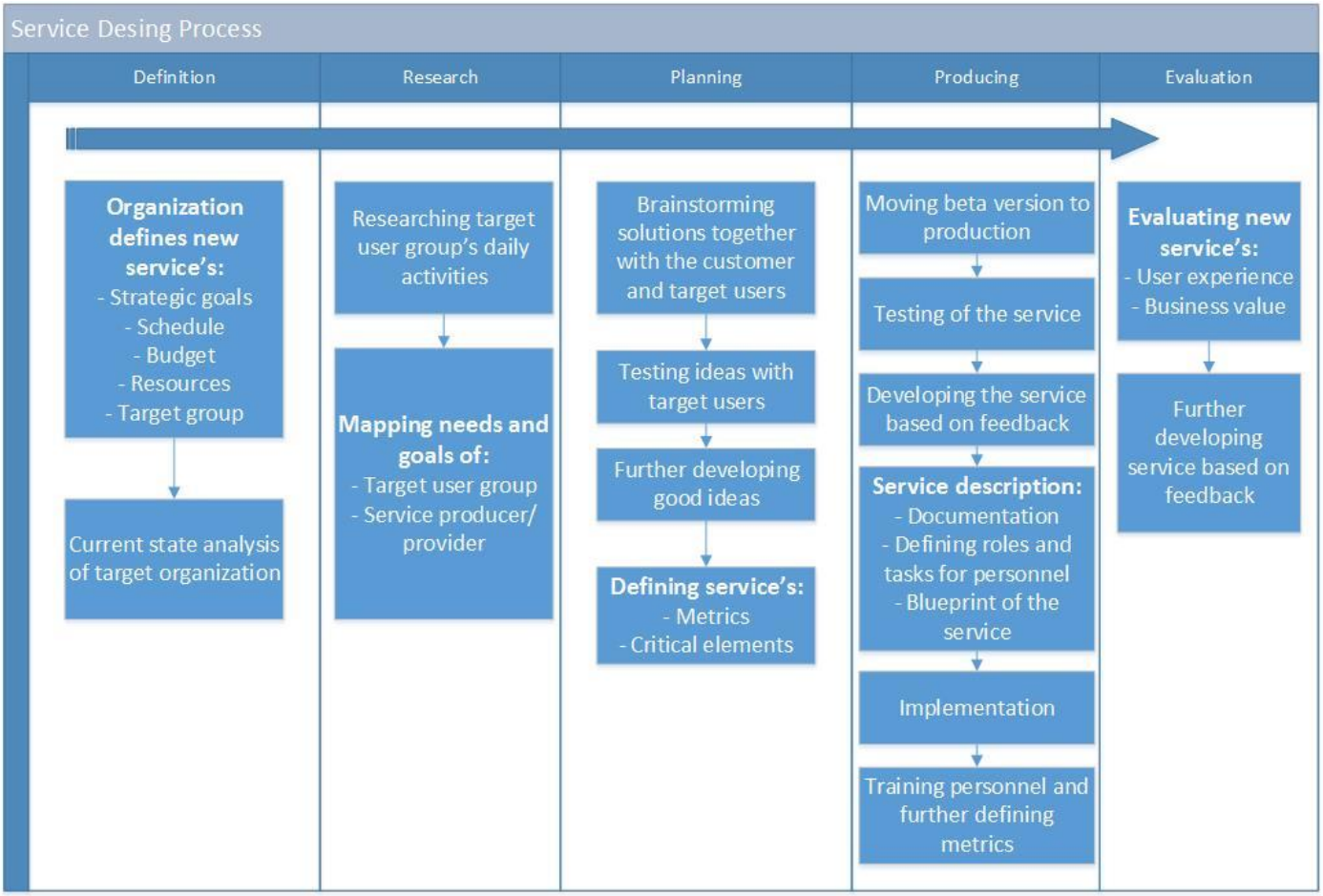

Figure 6. Service design process.

As seen in Figure 6 above, a service design process consists of five main phases: *definition, research, planning, producing and evaluation*.

Definition

The process starts with the first phase, *definition*. In this phase the goals of the project are being determined by the person, who is the owner of the service idea. This phase includes the story of the service concept, which determines what kind of benefits the new service offers for its users and for the target organization. Additionally, a comprehensive definition phase incorporates new service's target users, business and strategic goals, schedule and budget. People involved to the service design project are being named as well. The owner of the service idea informs the other participants of the project before mentioned things. (Tuulaniemi, J. 2011: 130-133)

After definition of the resources and goals of the project, first initial current state analysis of the target organization is being made by the service producer or provider. Service producer or provider needs to be informed of the same things as other target organization's project participants are. Service provider needs to evaluate, how the new service would serve the purposes of the target organization, what kind of risks does the service include and does the service fit to the imago of the target organization. (Tuulaniemi, J. 2011: 130, 136-137)

Research

The second phase, *research* is about collecting and analysing information, which enables the planning phase to be more efficient and match the needs of the target users. The service needs to be designed for the target users, so their opinions need to be heard out and they need to be involved to different stages of the project. Interviews, surveys and observation of internal documentation can be effective ways of collecting information of the target organization. If necessary, the designers of the service can become a members of the staff of the target organization for a day. It is an excellent way for service designers to get insights for planning the service to match end-users needs better. (Polaine, A., Lovlie, L., Reason, B. 2013: 57)

After the service providers have gathered enough insights, the project participants will map the most critical needs and goals of the service for both service provider and target organization. Mapping of needs and goals will serve as a basis for the next phase of the project. (Tuulaniemi, J. 2011: 130)

Planning

The third phase, *planning* starts by generating ideas within the project group and end-users for solving different problems, which the new service would do. The best ideas are being separated and tested with the target users, if they are valid for solving the problem. This phase also includes prototyping the new service. Prototyping is done for testing the concepts of the new service, if they are fit for their purposes. Additionally prototyping can be utilized as a tool for increasing the understanding of the new service among the end-users. Prototypes of the service can be built of paper for instance. This is both time and cost efficient way of creating prototypes of a new service. If the target organization, which has ordered the new service has enough resources, the service provider can additionally

create prototypes in HTML or flash form for instance. (Tuulaniemi, J. 2011: 131, 196-197, 202)

The metrics of the service need to defined and connected to the service as early stage as possible. The metrics can be for instance KPI's (Key Performance Indicators), which measure the performance of the service. Measuring conversions is other effective way of evaluating service. Conversions or transitions are the most critical points of the service for the end user. They are steps of a process conducted by a service, which leads to the main goal. (Tuulaniemi, J. 2011: 131, 226-227)

Producing

The fourth phase, *producing* is naturally one of the most critical phases of the service design project. It includes developing and producing the service. After the first version, so called beta version has been developed, it should be moved to production to be evaluated by test end-users. Beta version should be published in the earliest stage possible in order to find the most critical usability and other functionality problems. Additionally, if the service is not moved to production early enough, it is exposed for being never implemented. Based on the feedback from the test end-users, the service will be further developed or fixed. (Tuulaniemi, J. 2011: 131, 230-233)

When the service has been developed to the desired level, service description will be created. Service description consists documentation of the service, which includes different processes, interaction points and most critical people involved to the service. This can be also called as the service blueprint. Additionally service description incorporates roles and tasks for personnel related to the new service. After the service description has been done completely, it will be fully implemented. (Tuulaniemi, J. 2011: 131, 212, 234)

Evaluation

When the service has been implemented to the markets, it is time to evaluate the results and the entire process of the service design project. Evaluation of the service can be conducted observing the metrics such as KPI's, which were placed in the planning stage. Furthermore, user experience can be evaluated by sending surveys to users or adding feedback forms to the service. Business value of the service can be measured for example by the number of new customers or cost savings. (Tuulaniemi, J. 2011: 131, 245)

The service will never be completely ready, it will be developed continuously to serve their users even better. It is important to follow the trends of the market and react to them by improving services. (Tuulaniemi, J. 2011: 245)

2.4 Usability and Nielsen's Heuristics

International Organization for Standardization (ISO) describes usability in its standard ISO 9241-11 as a level how a product or service can be utilized by specific users to achieve precise goals in terms of effectiveness, efficiency and satisfaction (ISO. 1998). According to Jakob Nielsen who is one of the leading experts of internet usability, defined usability by five key components: learnability, efficiency, memorability, errors and satisfaction. (Nielsen, J. 1993: 26)

There are thousands of usability guidelines for developers to follow when designing or evaluating user interfaces. Jakob Nielsen's endeavour was to reduce the complexity, so he cut the usability guidelines only to just 10 rules, which are called Nielsen's heuristics. They have been developed for explaining a large proportion of usability problems, when one observes or designs usability of any user interface.
(Nielsen, J. 1993: 19-20)

Nielsen's 10 principles for interaction design are following:

1. **Visibility of system status**

The system should always keep the user informed of what is going on by giving appropriate feedback within a reasonable time.

2. **Match between system and the real world**

The system should speak common language and use terms that a normal user understands and avoid using system-oriented terms. Information should appear in a logical order as in the real world.

3. **User control and freedom**

User control and freedom needs to be supported. If the user accidentally chooses some action by mistake, clearly marked emergency exit needs to be provided so the

user does not need to go through unnecessary steps. The system needs to support undo and redo.

4. **Consistency and standards**

Users should not wonder if different words, situations or actions mean the same thing. Same standards should be used through the entire system.

5. **Error prevention**

Optimally, the system should prevent situations that typically cause errors for the users. This could be done by either eliminating error-prone conditions or presenting users with a confirmation option before committing an action.

6. **Recognition rather than recall**

The memory load of users should be minimized. Users should not have to remember parts of previous steps to another. Instructions for different parts of the system should be easily available when appropriate.

7. **Flexibility and efficiency of use**

The system should provide accelerators for more experienced users to speed up the interaction with the system. Users should be allowed to tailor recurrent actions.

8. **Aesthetic and minimalist design**

Dialogues with the system should only contain relevant and commonly needed information. Every extra unit of information will confuse the users and slow their interaction with the system.

9. **Help users recognize, diagnose, and recover from errors**

Error messages presented to users should not contain any code, only plain text. The messages should be understandable, precisely indicate the problem and suggest a solution for users.

10. **Help and documentation**

Ideally, users could use the system without reading any documentation. However, the documentation need to be available for users. The documentation should be easily available, focused on the task of the user and list concrete steps for the user to carry out.

According to Jakob Nielsen, these usability principles should be followed by every user interface designer or developer. However, it requires some experience to apply the heuristics correctly into all cases. Still, even developers or evaluators with lesser experience can find several usability problems with the heuristic evaluation. The remaining problems can be revealed by making test cases for the user interface. Also it is recommended that several people should do a heuristic evaluation in order to find different usability problems. (Nielsen, J. 1993: 20)

2.5 Self-Service Portal Elements Usability Best Practices

This section discusses usability best practices of the most common elements of an employee self-service portal. Those elements of the portal are: *hierarchy, navigation, pages, appearance and portal content*. Those elements were chosen, since they are the most important elements that every portal or website needs to contain. (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 215). Usability of those elements define the user friendliness of a portal. Even though this section commonly refers to words such as website and site, those best practices can be applied to employee self-service portals as well.

2.5.1 Hierarchy

The hierarchy of the site is usually revealed to the user through *navigation menus*. Users prefer hierarchies and they focus on one level at a time. This allows users to scan one page and then move to a second, which reduces revisit amounts (Shneiderman, B. 2007: 49). Commonly hierarchies are categorized into separate groups and even further, to their subgroups. There are two different types of hierarchies that sites could apply: *flat* or *deep* hierarchies. Hierarchy types are presented in Figure 7 below. (Whitenton, K. 2013)

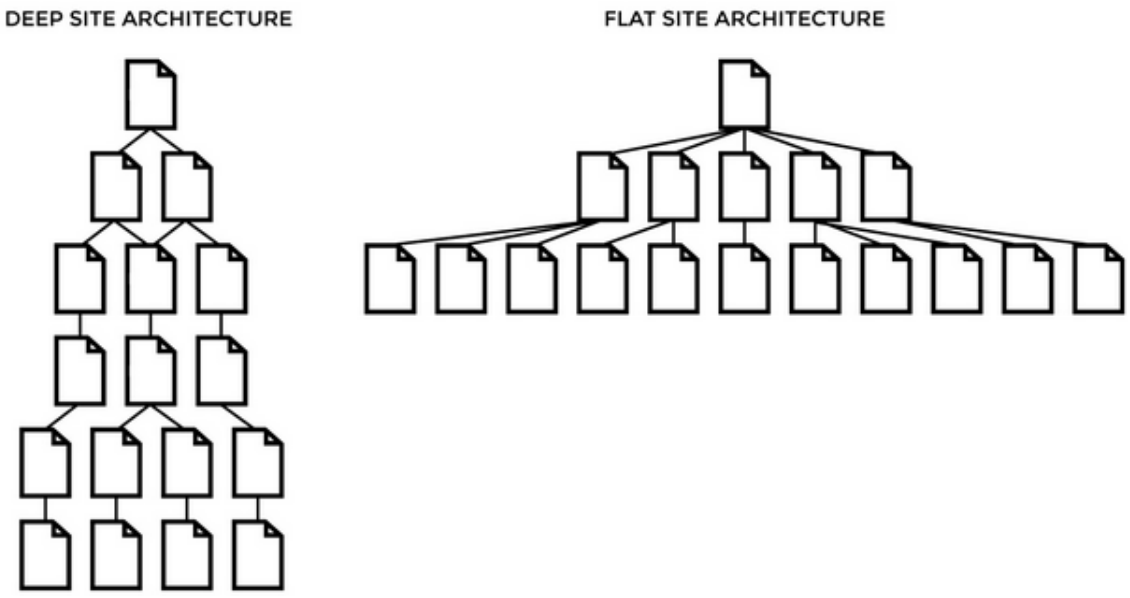

Figure 7. Types of site hierarchies (Soulier, H. 2014).

In Figure 7 above, deep hierarchy with multiple sublevels is located on the left side and flat hierarchy with a few vertical levels on the right side. Both hierarchies have their pros and cons. The content of the site, which uses flat hierarchy is more discoverable than deep hierarchy site's and users do not need to go through long chain of links. Deep hierarchy categories can be further specified and they do not overlap. Additionally, deep hierarchy enables simpler and less crowded pages. The hierarchy type of the site should be selected based on, which one suits its purposes better. For example, deep hierarchy suits better for online stores because of the deep categorization of products. Sites, which have distinct and recognizable categories, should use the flat hierarchy type instead. (Whitenton, K. 2013)

2.5.2 Navigation

Navigation elements are described as those elements, which the user utilizes for moving from different page to other when using a web-service. Navigation should give users answers to the following questions: *Where am I? From where did I come here? Where can I go from here?* Navigation elements should clearly stand out from the content, but still not dominate the user interface. This could be done for example by some colour, empty space or slightly larger font in the navigation for giving it slightly larger visual importance than the basic content. (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 215)

Navigation menus

There are different kind of navigation menus that enable users to access different parts of the system. The most important navigation menu is *global navigation*, which is present on every page of the website. The global navigation menu should be located at the top of the page underneath the logo as a horizontal navigation menu or at the left side of the page as a vertical navigation menu. Horizontal and vertical navigation menus are presented in Figures 8 and 9 below. (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 215)

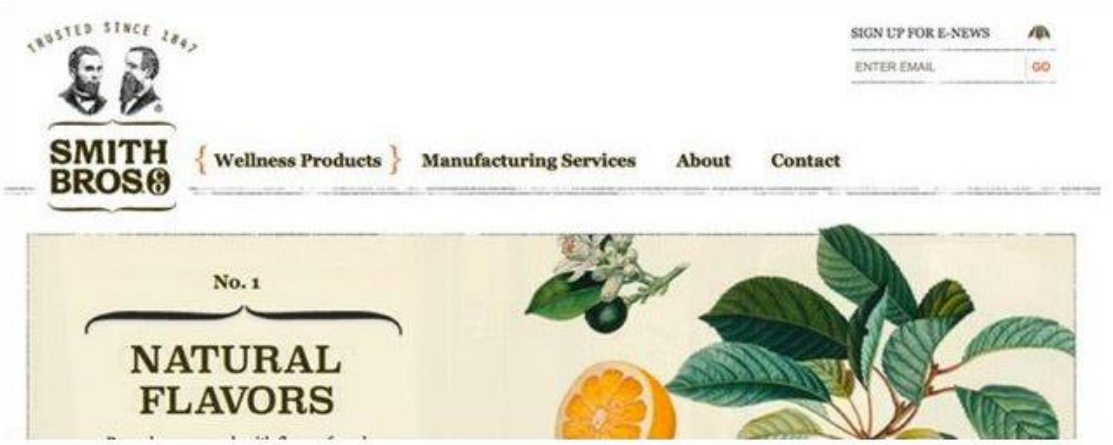

Figure 8. Horizontal navigation menu (Crestodina, A. 2013).

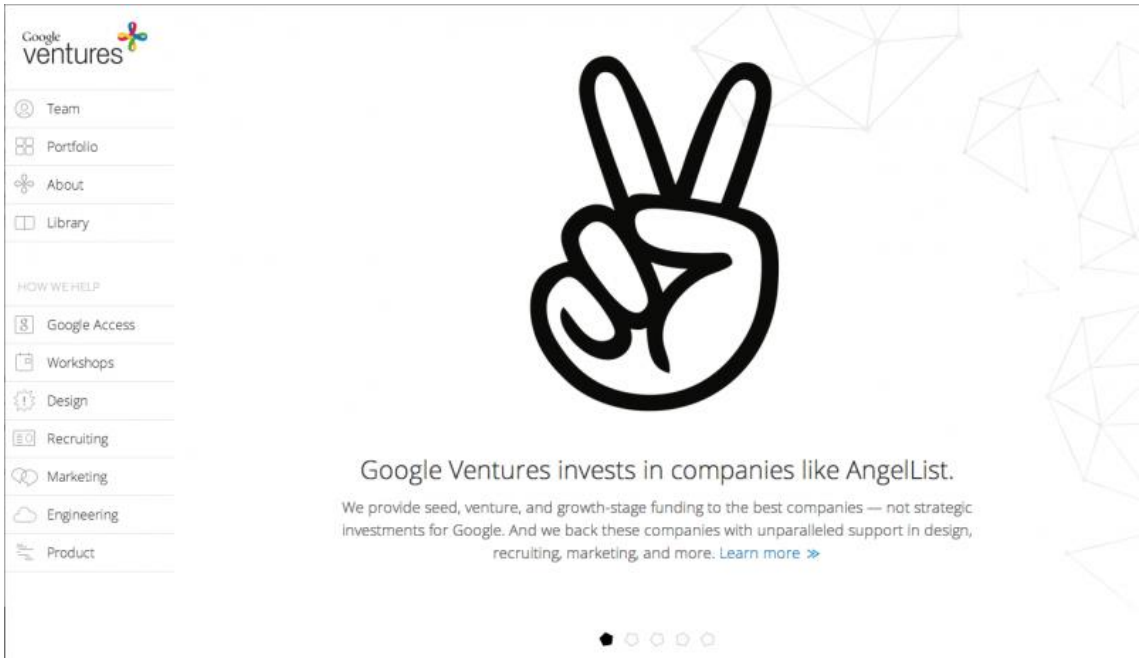

Figure 9. Vertical navigation menu (Parry, A. 2013).

Both of the navigation menu types have their pros and cons. A horizontal navigation bar allows more space to different objects beneath the navigation bar, but it can contain only 8-12 links at maximum. A vertical navigation bar does the opposite: lesser space horizontally for the objects, but more space for links to the navigation bar. (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 215)

The other commonly used navigation menu type is *local navigation*. A local navigation menu commonly contains different objects in different parts of the system. Usually it is placed under the global navigation menu or placed as a completely separate vertical navigation menu. Figure 10 below illustrates local navigation example options. (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 215)

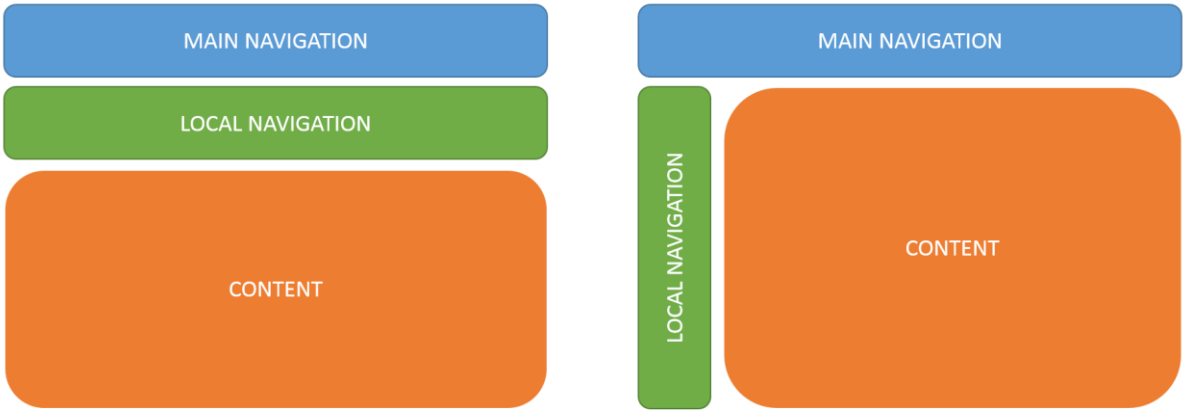

Figure 10. Local navigation example options.

As Figure 10 illustrates, local navigation can be placed in different places. It can also be included in the main navigation as a drop-down menu. This means, whenever the user hovers the mouse on a navigation menu item, it reveals more related menu items underneath the navigation menu.

A contextual navigation menu may include local links to related content for instance. Local navigation can be placed to search results page after the user uses the search engine to find a desired page. Users often get close to the content they try to search, therefore contextual navigation helps users to find the desired information faster. (Nielsen, J. 2000)

Additionally, a so called breadcrumbs navigation is a good addition for letting users be aware of where they are currently within the system. Breadcrumbs navigation is positioned to the subpages and it shows user's exact location within the system compared to the main page. Breadcrumbs navigation should be only included in systems, which have many levels of content. (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 218-219)

Search

According to Nielsen's research results, approximately 50 % of users prefer to use search, 20 % follow navigation menu links and the rest use both navigation functionalities (Nielsen, J. 2000: 224). A web-service should support both of the navigation functionalities in order to serve every user's navigation preferences. A typical placement for search field is the top right-hand corner above the navigation menu or as a part of the navigation menu. Figure 11 below illustrates the placement and visuals of the search field.

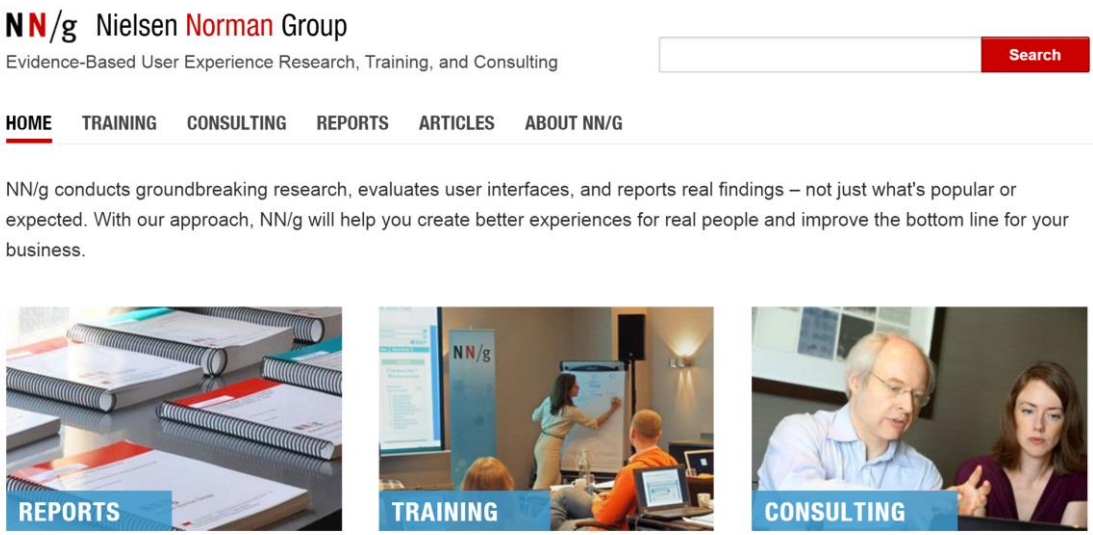

Figure 11. Search example placement (Nielsen Norman Group).

As Figure 11 indicates, the search box is big enough and can be easily found. The search field should also be included in every page of the system and the search results should be global, not only specified to some subsite. The search field should also be wide enough so users would understand, that they can type several search words instead of one for getting more accurate search results. (Nielsen, J. 1997)

Predictive search will enable users to find their desired information or services more efficiently. An example of the predictive search functionality is presented in Figure 12 below. (O'Byrne, A. 2012)

Figure 12. Predictive search (Pernice, K. 2013).

As seen in Figure 12, predictive search shows a drop-down list after the user has typed a specified amount of characters. The user does not need to press the search button in order to see search results. (O'Byrne, A. 2012)

2.5.3 Pages

Ideally, every page should only have one specific objective. Pages should contain only a minimalistic amount of information. Any unnecessary information should be eliminated, for making the user interface look as simple as possible. (Nielsen, J. 1993: 115-116)

Main page

The main page is the most important page of the entire site. It can be described as a company's face to the world. A well-designed homepage increases the total business value of the website (Nielsen, J. 2012). In order to give the user an overview of the site, main page should answer to the following questions as quickly as possible. (Krug, S. 2006: 98, 99, 106)

1. **What is this page?**

Offer users descriptive, a one sentence tagline for giving users understanding of what kind of page this is. Also the site must include company or site logo for emphasizing the

nature of the site, where the user has arrived. A welcome message with the description of the site is also an effective way for describing the content of the site. (Krug, S. 2006: 106; Nielsen, J. 2012)

2. **What can I do and find within the website?**

The main page should include a global navigation menu, which describes the hierarchy and content of the site. (Krug, S. 2006: 95)

3. **Why should I be on this page?**

The site needs to offer inducements for the users, in order to keep them interested and stay on the page. Those inducements can be fort instance most common searched content or news. (Krug, S. 2006: 96)

4. **Where do I start?**

The website should indicate a starting point for the user clearly. The starting point should reveal the main 1-4 tasks that the user could conduct within the site. The navigation menu and search field should be clearly visible for highlighting the starting point. (Krug, S. 2006: 96; Nielsen, J. 2002)

Figure 13 below illustrates a web portal, which fulfills the criteria of a best practice main page.

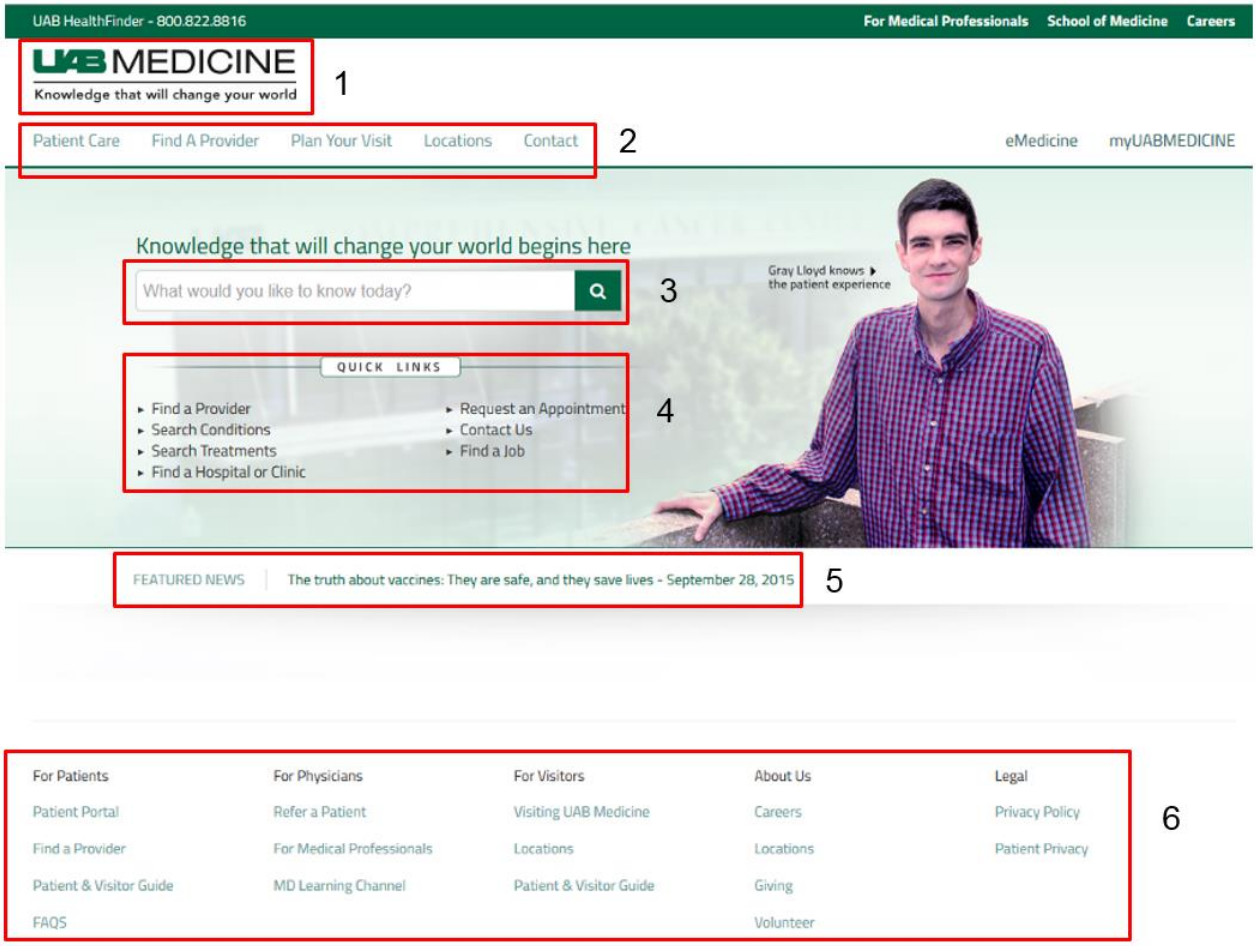

Figure 13. Best practice main page of an example portal (Yan, M. 2015).

As seen in Figure 13 above, the example web-portal follows main page best practices. Main page elements have been numbered and highlighted:

1. Company logo and tagline
2. Navigation menu
3. Search field
4. Quick links to most common content
5. News section
6. Additional navigation menu for providing users a more clear idea of the hierarchy of the site

Additionally, if the website has a registering option, it should clearly indicate this, if the user has logged into the site. In some situations it is also preferable to provide access to

the most common content of the site for making navigation more efficient. (Krug, S. 2006: 96)

Content pages

Content pages are the pages on the site, where users could actually conduct their different activities. They need to be unified with the styles and navigation models with the other pages of the site like the main page, in order to make the user feel that he/she is browsing the same site. Additionally, content pages need to always incorporate a link to the main page. (Nielsen, J. 2000: 223-224)

2.5.4 Appearance

Visual planning and the appearance of different objects are some of the most essential parts of usability, because they are the first things that the user sees when arriving to the site (Kuutti, W. 2003: 90). A basic principle of appearance is, that pages should always follow the same guidelines in order to preserve consistency within a site. Appearance consists of three different parts: *setting of objects, icons and typography*. (Nielsen, J. 1993: 132-133)

Setting of objects

Setting of objects in one particular page plays an important role in the user understanding the content. Similar kind of objects or information should be positioned in the same way across the entire site, in order to facilitate recognition among the users (Nielsen, J. 1993: 132). The pages should also contain enough white space to increase readability and usability. Typically people read content from left to right and from up to down. This has become a standard way of setting objects. However, by using strong visual stimuluses for example pictures, the user's attention can be directed to somewhere else. These visual objects should be used restrainedly for not distracting users. (Kuutti, W. 2003: 91-92; Shneiderman, B. 2007: 165)

Colours

The most important criteria of web-page colours is their functionality. They should be used restrainedly for preserving good usability in the user interface. Designers need to

be careful, when dealing with text and background colours. Best practice is to use white background and black text. (Kuutti, W. 100-101)

Colours can be utilized as a tool for giving logicality to the site. Similar kind of functions should be marked with the same colours. For instance, every link should be marked with the same colour and be possibly underlined for indicating the users, which objects they can click. (Kuutti, W. 100-101; Nielsen, J. 2004)

Typography

Typography can be an essential part of the readability of the site. If the other elements have been designed well, but the user cannot read the content, the site has no purpose. Typography of the site should use the following best practises. Text and its background needs to have enough contrast and the background colour or image should be discreet enough for achieving good readability. Fonts should be big enough, so those persons whose vision is not perfect, can see and read the text easily. Mostly text should be aligned to the left side, in order to achieve better reading speed. Additionally capital letters should be avoided, because it decreases reading speed. (Nielsen, J. 2000: 125-129)

2.5.5 Portal Content

Terminology

Terminology in the user interface should always speak the user's language and not the system oriented terms. The system should not assume that the user already knows its terms and processes. For achieving better understandability among the users, terms should always mean same things in the same context. It is recommended that the system should use terminology, which is utilized globally in the same context. The terminology of the system should not be tied to one specific organization. Additionally, it is preferred that the system should also offer users different language options, so the user would not need to use the system in a foreign language. When designing terminology into the user interface, interactions should be viewed from the user interface, so the system would speak the user's language. (Nielsen, J. 1993: 123-124) (Sinkkonen, I., Nuutila, E., Törmä, S. 2009: 154-155)

2.6 Conceptual Framework for Employee Self-Service Portals

This section summarizes the best practices utilized in this study. It consists only of the most critical elements that enable Sofigate to create better employee self-service portals from design and usability aspects. Figure 14 illustrates how best practices were utilized in creation of the new employee self-service portal concept.

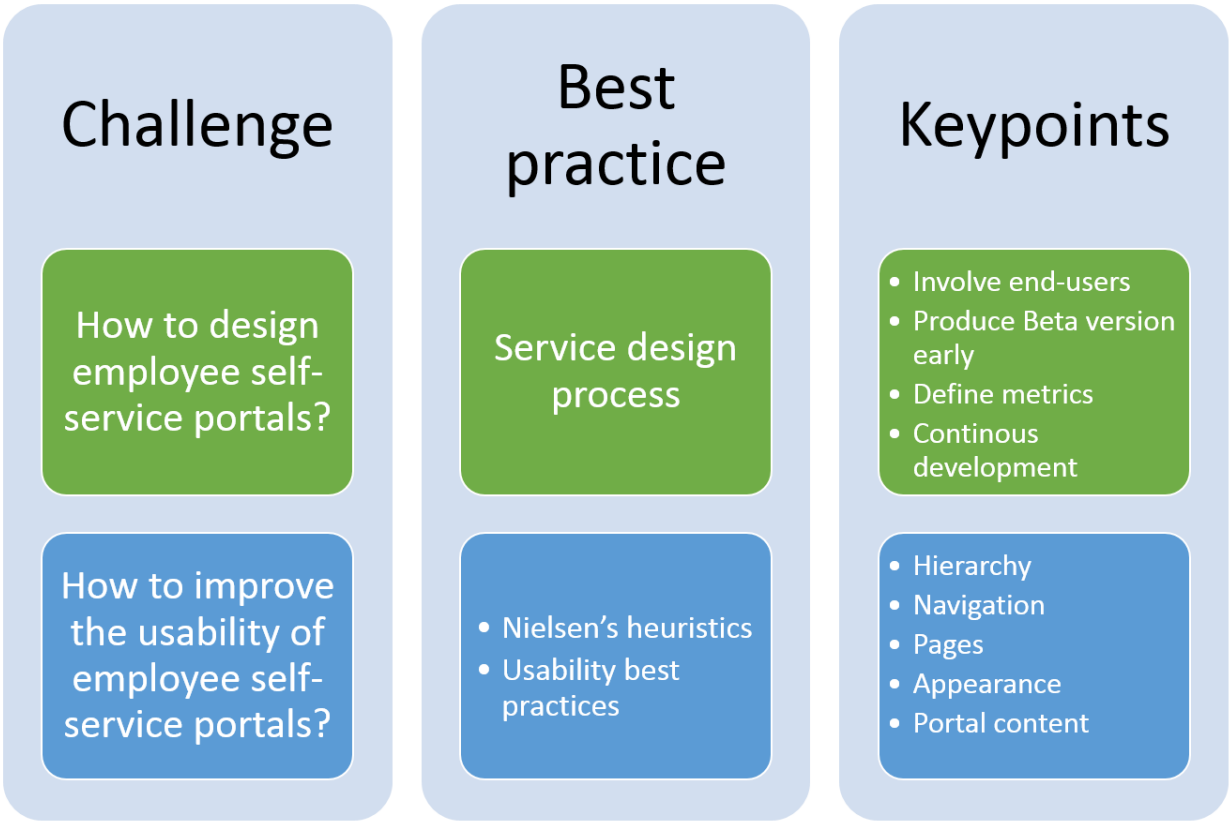

Figure 14. Conceptual framework.

As Figure 14 illustrates, the main challenges of the study are located on the left side of the chart. Best practices suggested in literature to solve those challenges are located in the middle column. The key points of a specific best practice for solving the challenge are located on the right side of the chart.

For defining the future process for creating employee self-service portals for the customer, a service design process is used. Key points for creating a new service design

process include involving end-users in the design and test phase, producing a beta-version early for end-users to test and comment, defining and setting metrics for the service as early as possible and continuous development of the service.

For improving the usability of employee self-service portals, Nielsen’s heuristics and additional usability best practices is utilized. Key points to address in improving usability of employee self-service portals include hierarchy, navigation, pages, appearance and portal content.

3 Current State Analysis

This section discusses the findings from the current state analysis of Sofigate, concerning current employee self-service portal projects and customer portals. This section discusses first the findings of project manager interviews, secondly current portal project phases and thirdly employee self-service portals of the current customers.

3.0 Findings of Project Manager Interviews

Four interviews for Sofigate project managers were conducted in order to determine the current state of how portal projects are conducted with the customer. The questions presented to the interviewees were presented in section 1.3. The most typical answers for each question are presented below.

1. **How are customer portals being planned? Does Sofigate create design documentation? Who designs the portals and how?**

Typically customer portals are being planned by Sofigate personnel or marketing agency, if the customer wants to create more advanced and further customized visuals. Commonly the process or designing portals follows the following pattern. Elements and functionalities are planned together with customers and Sofigate. Then portal initial visuals are made based on the specifications. Then the initial visuals are checked again and some adjustments will be made. Finally, the portal is moved to development and implemented.

2. **How design process is typically handled with the customer?**

Most commonly the portal project starts at the sales stage, then moves to kickoff where the project is officially launched. Next, the portal initial visuals are made. Then, workshops for further defining portal content, visuals and processes are arranged. After that, the portal is developed by Sofigate developers and tested by customer representatives. After the testing has been conducted successfully, portal will be moved to production and it will be documented. Finally, small development work will be made if the customer has some development initiatives. The current service design process is described in detail in section 3.1 below.

3. **Which are the most typical elements and functionalities that customers want in their portals?**

Typically customers want to include incidents and other ticketing functionalities, ordering of different devices, knowledge base, news and integration of other services outside ServiceNow directly to the portal.

4. **What kind of things are challenging for you and customers, when designing portals?**

The most challenging part is that Sofigate personnel does not have competence on the usability and visual side. If the marketing agency creates the visuals, they are often difficult to implement to the system, which makes the cost of the portal high.

5. **How do customers see the importance of portals?**

Most of the users prefer to use the portal instead of core user interface. The portal is seen very important. ServiceNow is one of the most important elements of IT and the portal can function as a metric of IT. Customers value the cost efficiency that the portal enables by its self-service functions.

6. **Which kind of professionals are typically present in the designing phase from Sofigate and customer side?**

In the designing phase most commonly technical owners of ServiceNow, marketing and communication personnel and process responsible persons are representing customer side. The project manager and developer are present from Sofigate.

More detailed information of the interviews can be found in the appendices. Based on the findings of the interviews, the current service design was mapped in section 3.1 below. Additionally, the most typical elements and functionalities were utilized when designing best practice employee self-service portal user interface visuals.

3.1 Current Service Design Process

Sofigate has conducted several employee self-service portal projects to their customers. According to the interviews with the project managers of Sofigate, the projects are always carried out well and completed in time. However, the quality of employee self-service portals is not on the desired level in terms of visual look and usability. Previously, Sofigate did not have any experts on the service design line of business, which has affected the quality of the portals. Additionally, they do not have any formalized process for running projects. Currently employee self-service portal projects commonly consist of eight main stages. The current portal project chart is illustrated in Figure 15 below.

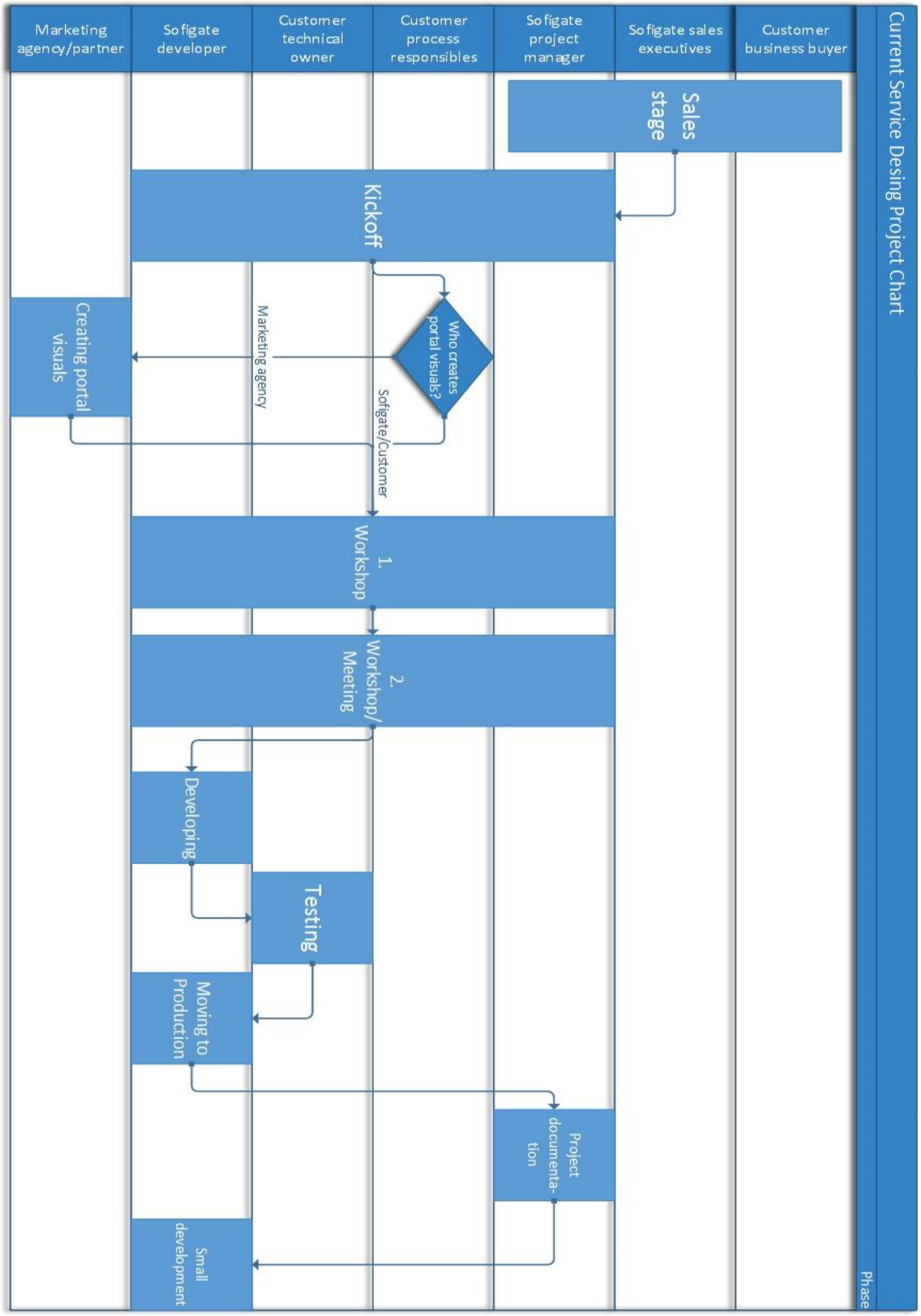
Current Service Desing Project Chart
Phase
Customer business buyer
Sofigate sales executives
Sofigate project manager
Customer process responsibles
Customer technical owner
Sofigate developer
Marketing agency/partner
Sales stage
Kickoff
Who creates portal visuals?
Marketing agency
Sofigate/Customer
Creating portal visuals
1. Workshop
2. Workshop/ Meeting
Developing
Testing
Moving to Production
Project documenta-tion
Small development

Figure 15. Current employee self-service portal project chart.

Sales stage

As seen in Figure 15, the employee self-service portal projects start usually with the *sales stage*, where Sofigate's sales executives and project manager endeavor to sell an employee self-service portal to customer company's economic buyer. Sofigate's representatives try to convince the customer to buy the employee self-service portal by means of efficiency, user experience and cost savings. Based on the interviews with Sofigate project managers, new customers always buy an employee self-service portal immediately after they have decided to acquire ServiceNow. Customers do value employee self-service portals more than before, since most users are used to utilizing web services and prefer to use them, rather than contacting the service desk via phone. Therefore, it is rare that customer orders a separate portal project. Table 3 below indicates the strengths and weaknesses of current sales stage.

Table 3. Strengths and weaknesses of current sales stage.

Strengths	Weaknesses
+ Effective selling of employee self-service portals + New customers buy portal immediately	- No live portal to demonstrate to customers - No business benefits defined

As Table 3 above indicates, Sofigate's representatives sell employee self-service portals effectively. Customers order various portal projects from Sofigate during a year. Additionally new customers have been convinced to buy a new portal project directly after acquiring ServiceNow. The sales stage's main weakness is that Sofigate does not have their own employee self-service portal to demonstrate to the customers. Customers do not get the idea of what they are actually buying. Additionally, no business benefits of the self-service portal have been defined, which causes the customers to be uncertain about whether they should buy a portal.

Kickoff meeting

The next main stage is *kickoff meeting*, where the project is officially launched. The most critical people, who are the main contributors of the project, attend this meeting. Typically

the agenda of the meeting consists of project schedule, project work estimates, costs for the customer organization, project participants and their roles and responsibilities, upcoming meetings, project scope, work packages and practical matters regarding the project. Sofigate's project manager presents the content of the work packages and explains the work estimates related to every work package. Additionally, representatives of Sofigate demonstrate example portals with screenshots or actually show live portal created for other customer. Sofigate needs to ask permission from the customer, if they can show customer's portal to others. Typically the project managers of Sofigate prepare the meeting presentation slides by copying the template from previous similar projects.

Another critical decision in the kickoff meeting is who will create the visuals specifications of the portal. Since Sofigate does not have any visual experts, some customers decide to source the visuals for their portal from another provider, for instance from a marketing agency. The marketing agency designs the visuals, which includes colors, setting of objects and other visual elements for the customer. This is problematic for Sofigate, since the designers of the marketing agency commonly do not have an understanding of what kind of elements are possible to implement onto ServiceNow. Those elements are often difficult to implement, which causes additional costs for the customer. Some customers design the visuals by themselves and some let Sofigate create the visuals. Table 4 below indicates strengths and weaknesses of current kickoff meetings.

Table 4. Strengths and weaknesses of current kickoff meetings.

Strengths	Weaknesses
+ Right issues discussed in the meeting	- No live portal to demonstrate to customers - No template for agendas - No visual competence - No metrics defined for portals

As Table 4 above indicates, currently the correct subjects are being discussed in the kickoff meetings. For weaknesses, Sofigate cannot demonstrate a live portal to customer representatives, since they do not own one. Furthermore, Sofigate does not have predefined agenda templates, which causes extra work for the project managers. Additionally, Sofigate does not have any visual competence, so customers often buy the portal visuals from elsewhere. Metrics of the portal are not discussed either in the kickoff meeting.

Metrics are essential, when evaluating the business value after the portal has been implemented.

Workshops

The next stage of the project is the *first workshop*, where the content of the portal is visualized. The portal's initial visuals are designed for the workshop by Sofigate, customer, marketing agency or some other partner. Those visuals are being further developed together with the workshop participants.

First, elements included in the portal are agreed on together, such as news, ticket logging or knowledge browsing.

Secondly, the participants create or develop an illustration of the portal depending on if they have agreed to create an initial illustration of the portal before the workshop.

Next, participants start planning processes within the portal onto a flip chart such as incident, change request or product order process. Typically different development ideas are drawn onto a flip chart.

The next stage of the project is *second workshop or meeting* where the participants further develop processes or visuals, if they did not manage to finish them entirely in the first workshop. The participants discuss the practical matters, such as which pictures they can utilize in the portal and whether the visuals match the customer's branding guidelines. Finally, when they have agreed on the above, they agree that development work can be started. Table 5 below indicates strengths and weaknesses of current workshops.

Table 5. Strengths and weaknesses of current workshops.

Strengths	Weaknesses
+ Effective workshops	- No end-users involved - No prototyping - No predefined agenda - Sofigate does not have any professionals on visual or usability side

As Table 5 indicates, the workshops are conducted effectively. The content and functionalities within the portals are designed effectively. The biggest weakness of current workshops is that no end-users who would actually use the portal are not involved. Furthermore, Sofigate does not utilize prototyping tools, such as Balsamiq, which have been acquired for prototyping purposes. Additionally, no predefined agenda is included, which would contain the most typical matters to decide in the workshops, such as portal metrics and user groups. The shortage of visual and usability professionals attending the workshops limits the quality of employee self-service portals.

Development

Next, a developer or various developers assigned to the project start to *develop* the portal based on the specifications determined in the workshops. Since the project is often divided into separate work packages, developers create content towards a one work package. After every work package is ready, the developer and project manager present the content to the customer. The customer tests the new content and gives feedback to Sofigate's project team. Customers often change their mind during the project. This causes extra work for developers, as they need to change different properties of the portal multiple times during the project. Table 6 below indicates the strengths and weaknesses of the current portal development.

Table 6. Strengths and weaknesses of current portal development.

Strengths	Weaknesses
+ Capabilities to create advanced and customized portals + Good tools, ServiceNow supports portals	- Documentation handed over to customer in a late stage - Visuals made by other than Sofigate personnel are often difficult to implement and expensive for the customer

Table 6 above presents the strengths and weaknesses of the current portal development. Sofigate has capabilities to create advanced and further customized portals. Additionally, ServiceNow supports easy portal development and does not require advanced scripting knowledge. One of the main weakness is that portal configuration documentation is not updated nor sent to the customer in this stage. Documentation is updated afterwards.

Furthermore if the customer has ordered visuals from a marketing agency, the development work is difficult and takes time, which causes additional costs for the customer.

Testing, moving to production and documentation

When every work package has been created successfully, customers often *test* the new content systematically. Final changes and fixes are made by the developers based on feedback. After the new portal and processes within it have been declared functional, the portal will be moved to production, where end-users can start using the new employee self-service portal. Sofigate's project manager creates documentation of the portal with the assistance of a developer. Documentation is in Word template, which consists of different elements used in the portal, portal visual guidelines, images used in the portal, portal processes and content of the pages. Table 7 below indicates the strengths and weaknesses of current testing, moving to production and documentation.

Table 7. Strengths and weaknesses of current testing, moving to production and documentation.

Strengths	Weaknesses
+ Predefined document template	- Documentation handed over to customer in a late stage - No implementation plan/release documentation

As Table 7 indicates, the main strength of this stage is that Sofigate has a comprehensive documentation template for describing the portal elements and processes. Still, the documentation is sent to the customer after the portal has been implemented, which is too late. Hence, commonly the implementation plan is not agreed with the customers and the release is not documented.

Continual development

After the documentation has been handed over to the customer, the project can be declared to be over. Typically, there is no formal project feedback session with the customer or within Sofigate's project team. Portals are developed constantly, even after the project is declared to be over. Commonly end-users notice errors within the portal or customer's technical owner presents development initiatives for enhancing the employee self-service portal. The developer of the portal or other developers of Sofigate will fix these errors

or build new features to the portal. Table 8 below indicates the strengths and weaknesses of current continuous improvement of employee self-service portals.

Table 8. Strengths and weaknesses of current testing, moving to production and documentation.

Strengths	Weaknesses
+ Continual development of portals	- No formal feedback session

As seen in Table 8, the strength of this stage is that continuous improvement is actually done for customer portals. Still, after the project has been declared to be over, there is no formal feedback session, where the benefits of the portal project or business benefits of the new portal are discussed. This would be essential for both customers and Sofigate.

3.2 Portal Assessments

Current operational customer's employee self-service portals were evaluated to identify their strengths and key areas for improvement from usability and visual aspects. Portal assessments were made for two different customer portals. Company A's portal has been designed by the personnel of Sofigate and Company B's portal designed by a marketing agency. Both portals were evaluated by using Nielsen's heuristic evaluation for finding general usability strengths and weaknesses. Additionally, portal elements were evaluated individually by comparing them to the usability best practices.

Nielsen's heuristic evaluation was conducted by performing various activities within both of the portals. Those actions were for instance: ordering a device, creating an incident and checking status of the request created to support. Table 9 illustrates the general evaluation of the actions conducted by Nielsen's heuristic evaluation method.

Table 9. Nielsen's heuristic evaluation for both portals.

Nielsen's heuristics	**Company A**	**Company B**
Visibility of system status	**2**	**2**
Common language and logicality	**2**	**2**
User control and freedom	**1**	**1**
Consistency and standards	**0**	**0**
Error prevention	**1**	**2**

Minimize user's memory load	**2**	**2**
Flexibility and efficiency of use	**2**	**2**
Aesthetic and minimalist design	**0**	**1**
Help users recognize, diagnose, and recover from errors	**1**	**1**
Help and documentation	**3**	**0**

Classification:	**0** = Not a usability problem	**1** = Only cosmetic problem: fixed when time	**2** = Minor usability problem: makes usability difficult, will be fixed	**3** = Greater usability problem: makes usability difficult significantly, needs fixing immediately

The different sections in Table 9 above have been given four different color codes. The green color representing number 0 indicates that a specific area is not a usability problem and has been conducted well from the usability aspect. The yellow color representing number 1 indicates that the usability issue of a specific area is only a cosmetic issue and can be fixed when there is enough time. The orange color representing number 2 indicates that usability problem should be fixed in higher priority. The red colour representing number 3 indicates that the usability problem of that particular area has a significant impact and should be fixed immediately.

Table 9 indicates that Company B's portal designed by a marketing agency has slightly better results than Company A's portal in terms of the usability aspect. Company A's simple and minimalistic portal design ensured that the user is not overwhelmed by the amount of the content. The major flaw of Company A's portal was the shortage of a help section of the portal. Company B's portal was visually well designed. Still the amount of content and complex terminology reduces its user friendliness. Different elements of both customer portals will be further analysed in subsections 3.1.1-3.1.5 below.

3.2.1 Pages

Company A

Company A's main page is the first view that the user sees after logging into the portal. The main page of Company A is illustrated in Figure 16 below.

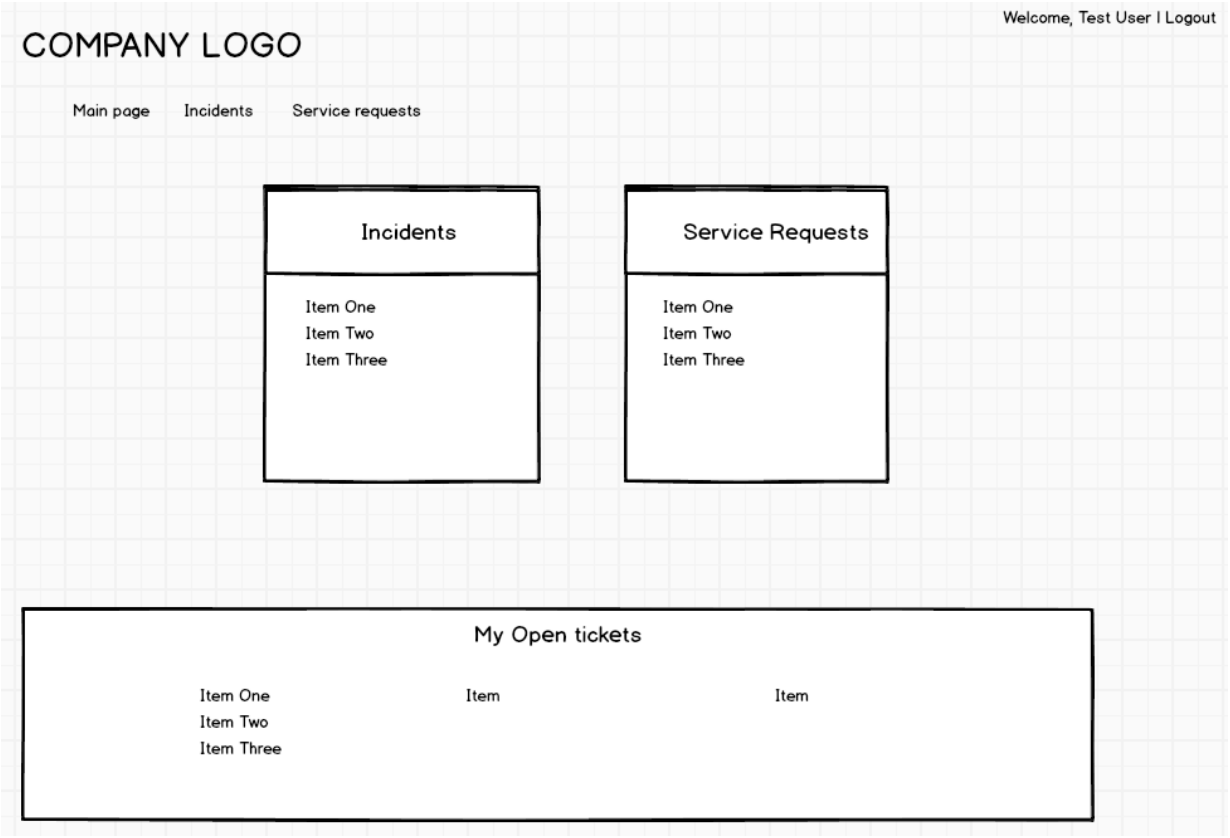

Figure 16. Current main page of Company A.

As seen in Figure 16, the main page follows usability best practices by containing minimalistic amount of information. Any unnecessary elements have been omitted. The main page contains the company logo, navigation menus indicating the hierarchy of the site, a welcome-message for the user who has logged into the site and a shortcut for the user's personal tickets. However, the main page does not indicate the nature of the site for the user: there is no short description nor name for the site. Additionally, the global navigation menu fades to the white background, because of its small size and white colour. Hence, it does not indicate a clear starting point for the user. The lack of the search functionality also prevents the user from knowing where to start. The main page has a lot of available space, so a possible "News" section could be included for making

the user to be more interested in the site. Furthermore, extra quick links could be added for speeding up processes, when users conduct their activities within the site.

Other pages are unified with the same styles as the main page, so the user gets the feeling that he/she is actually conducting business within the same site. Global navigation also follows to every page of the site. Every page includes the company logo, containing a link to the main page. Most of the content pages are simple and they contain only necessary information.

Company B

Company B's main page follows similar baseline as Company A. The main page contains only minimalistic amount of information, which enables the user's faster understanding the content of the page. The main page of Company B is illustrated in Figure 17 below.

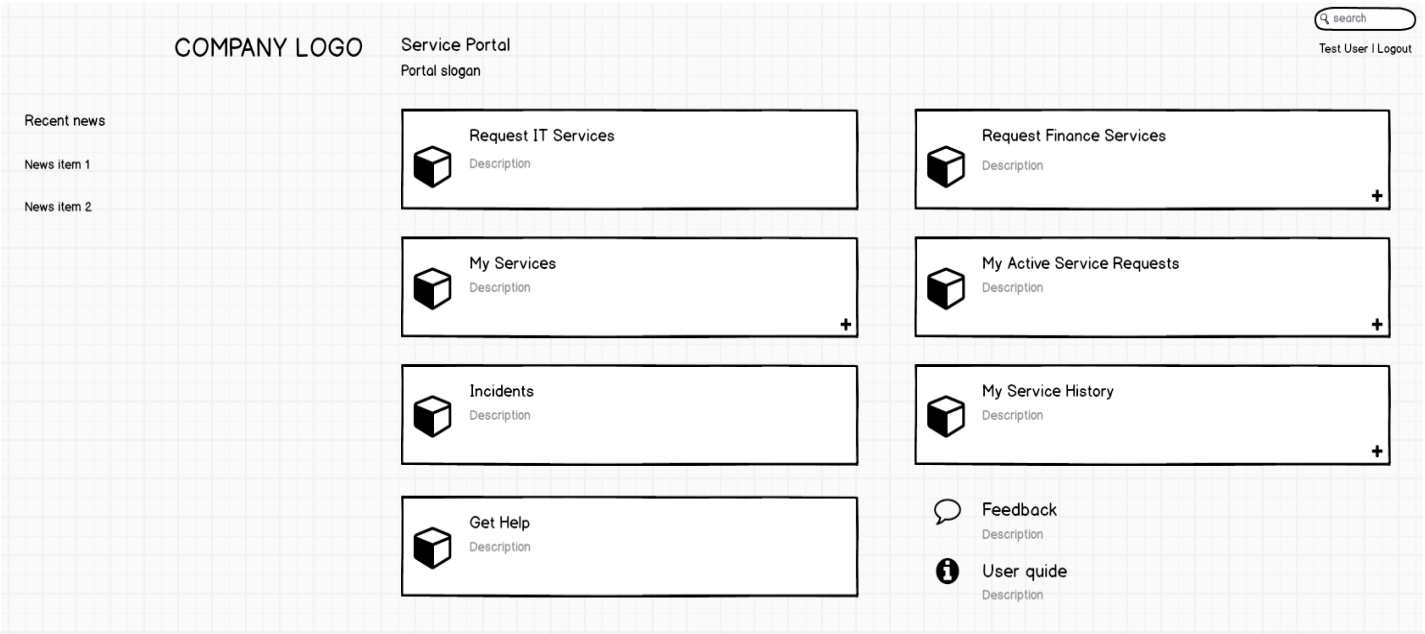

Figure 17. Current main page of Company B.

As Figure 17 indicates, the main page contains similar elements as Company A's main page. The main page contains a header which incorporates the company logo, slogan of the site, text of user logged into the site and a search field. Additionally Company B's main page contains a navigation menu and news section. Company B's main page follows the best practices of a main page from the usability point of view. However, the site does not provide any shortcuts for more advanced users like Company A's site does with

the ticket list. Moreover, the search field is difficult to locate, since it is sized to be so small. The main page does not contain any other global navigation than the search field. Overall the main page is easy to use from the usability aspect.

Other pages follow same the visual look as the main page. The pages contain the same header as in the main page. Additionally the header includes a navigation menu, which contains the same links as in the main page. In general, the other pages are simple and easy to understand.

3.2.2 Navigation

Company A

As Figure 17 indicates, global navigation and additional navigation menus are located on the main page. The global navigation menu is located beneath the company logo and additional navigation menus under global navigation. Navigation menus are sized too small and they do not draw the user's attention. The navigation menu does not stand out from the other content since it uses the same white background color. Additionally, the site does not contain a search function nor shortcuts such as "most ordered items". Thus, a shortcut is provided for users to navigate to own tickets directly. The global navigation menu contains an unnecessary link to the main page, since the company logo is enough to function as the link to the main page. When the main category of the navigation menu is clicked for instance "Service requests", it takes the user to browse service request opened by the user. Underneath the name of the category is an explanation of the navigation menu category: "browse the service catalogue". This does not seem to be logical. Other pages do not include breadcrumbs navigation, which prevents the users to be aware of their location on the site. Moreover, no local navigation menus are included to the other pages to speed up the user to find the desired information.

Company B

As seen in Figure 17, the main page contains a search field and a navigation menu providing access to every page of the site. Some items of the main page's navigation menu are marked with plus signs, which indicates that the menus are expandable. After the user clicks the plus sign, more options under a specific navigation menu appear. This enables more efficient usage of space on the main page and does not overload the main

page. The main page should contain quick links to boost up the processes within the portal.

Other pages contain the navigation menu attached to the header and local navigation. The header menu contains the same icons as included on the main page. The icons are descriptive, but users cannot necessarily understand the meaning of the icons. There is enough space on the page, so it would be possibly better to include the category names next to the icons or converting the menu into a drop-down menu. Local navigation menus are easy to locate and use. After clicking the local navigation menu item, the main content area of the page updates. Navigation is mostly implemented according to best practices.

3.2.3 Hierarchy

Company A

Hierarchy of the site is revealed to the users through both global and main page's navigation menus. The portal utilizes both flat and deep hierarchies: incidents section utilizes flat hierarchy and service catalogue instead deep hierarchy, which is typical for product catalogues. The incidents section's links take the user straight to the forms without going through any extra navigational pages. Catalogue links direct the user always to extra navigational pages for further categorization. These categorization pages are confusing for the user since the categorization of the catalogue is complicated and the portal does not tell the user where he/she currently lies within the system. This could be prevented by breadcrumbs navigation and simpler categorization of the catalogue.

Company B

The hierarchy of the site is revealed by the navigation menus on the main page. The hierarchy is quite similar as in the Company A's portal. Typically portals created onto ServiceNow use flat hierarchy for most of the pages and deep hierarchy for the service catalogue. Most of the pages that use flat hierarchy are easily accessed and understood. However, a catalogue page used for requesting IT services utilizes flat hierarchy. The page contains more than a hundred links to different pages. This part of the page should

use deep hierarchy and categorize the links further, in order to preserve understandability and increase the efficiency of the ordering process. This is the only flaw, but still quite a major issue within the hierarchy of the site.

3.2.4 Appearance

Company A

Setting of objects follows the same guidelines across the entire site. Global navigation, company logo, information of the user logged in and footer are located in the same places on every page. Forms, such as incident and service request follow usability best practices: text is positioned on the left side and there is enough space for separating the questions, which enables better readability. Mostly, fonts of the portal are big enough, but the main page's fonts should be slightly larger. The colours of the portal also follow usability best practices mainly. The background of the portal is white and body text uses black colour. Links are indicated by a separate blue colour. Colours are utilized perhaps too restrainedly. For example, the navigation menus should be coloured by some special colours in order to draw the user's attention, when arriving to the site. Extra colours would also refresh the visuals of the site.

Company B

Like in Company A's site, different objects have been set in a similar way across the entire site. Additionally different text is positioned to the left side on both forms and other pages and there is enough space separating text, which enables better readability. Objects are not positioned too close to each other either. However, some of the objects of the site should be larger. For instance local navigation menus on other pages are small and they could be enlarged for quicker recognisability. Pages have plenty of space available to be utilized. On the other hand, the main page's news section is sized to 100 % of the height of entire page, which is unnecessarily large. It could be sized to be 50 % of the page's height and position quick links below the news.

Most of the fonts are large enough, but still for example the body text could be larger. The portal colours follow usability best practices mainly. The portal uses a background image, which is mainly grey and portal fonts are black. Links are marked with a light blue

colour, which is not ideal for the grey background. Link colours should be slightly larger. Overall the appearance of the portal is refreshing.

3.2.5 Portal content

Company A

Terminology is in some situations IT oriented, which can be difficult to understand for a normal end-user. For example terms “incidents” and “service requests” are typically confusing for end-users and it is challenging to find the difference between them. The content of the forms is sometimes confusing. Figure 18 below illustrates the incident form of company A’s portal.

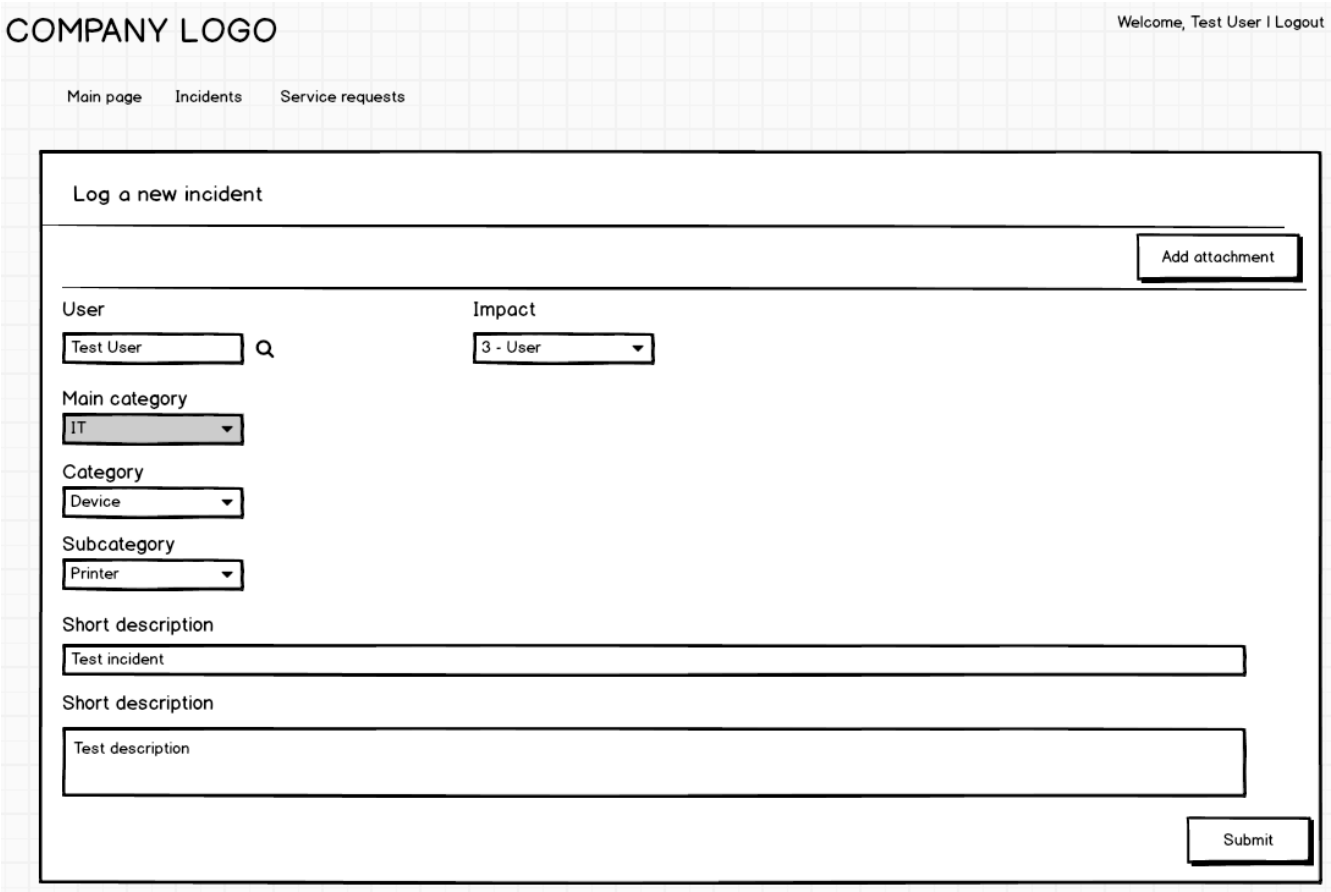

Figure 18. Incident form of Company A.

As seen in Figure 18, when selecting impact on the incident form, the following options appear: 3 - User, 2 – Group, 1 – Organization. It would be clearer for the end-users, if

the options would not include those numbers. Still, the forms are quite easy to understand for the end users, since they only contain a minimalistic amount of information. Additionally, the categorization of the service requests is quite complicated and requires effort from the end-users to understand the logic. Furthermore, the portal does not offer any help for the end-users to perform their activities in the portal. The portal does not include a general help-section and the fields of the forms should also include an explanation for making the usage easier.

Company B

Company B's portal commits the same mistake as Company A by using IT oriented terminology. Users need to be again aware of the difference between different terms such as service requests and incidents, when contacting support. The categorization of contacting support is extremely complicated for users without any knowledge of IT terminology. Occasionally, the content of the forms is confusing for the end users. Figure 19 illustrates the content of the forms.

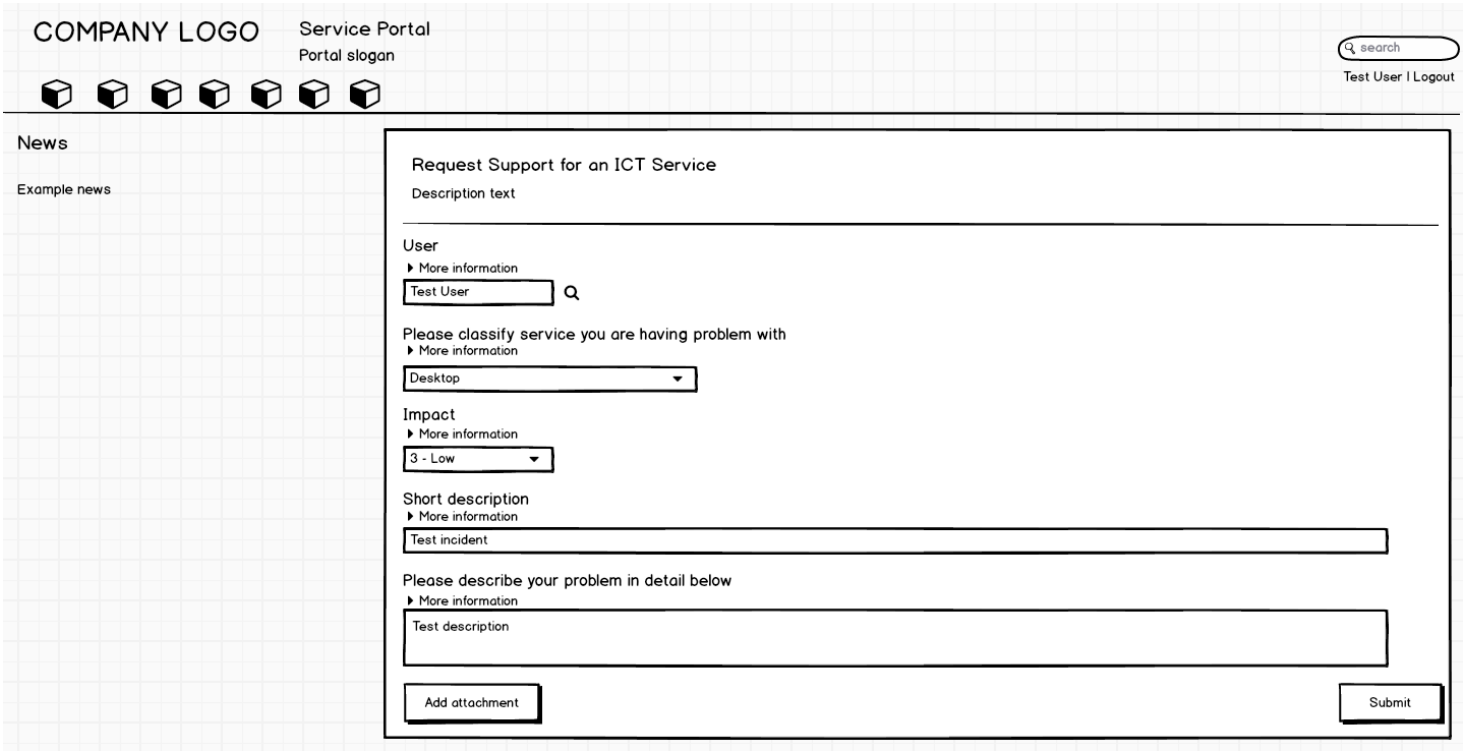

Figure 19. Incident form of Company B.

As seen in Figure 19 above, the content of the form is mostly logical. The categorization of the services is clear and the options include also the option “other”, which allows the users to categorize their services, when they are not completely sure of the service, what they are dealing with. The only confusing part for the users is the question, where users need to categorize the impact for the issue with options: 3 - Low, 2 - Medium and 1 - High. Again those numbers are unnecessarily included in those options. Fortunately, every question of every form of the portal includes an explanation, which eases the form filling significantly. Additionally, the portal has a general help section for new portal users, which allows more fluent usage of the portal.

3.3 Summary of Current State Analysis

This section summarizes the findings of the current state analysis. Pros and cons of current service design process and assessments made for existing customer portals are listed.

Current service design process

The current service design process was analysed by performing four Sofigate project manager interviews and by examining internal documentation. Table 10, below summarizes the most important strengths and weaknesses of the current service design process.

Table 10. Strengths and weaknesses of current process.

Strengths	Weaknesses
+ Effective selling of employee self-service portals + New customers buy portal immediately + Good tools, ServiceNow supports portals + Effective workshops with the customer + Capabilities to create advanced and customized portals	- Sofigate does not have any professionals on visual or usability side - Visuals made by other than Sofigate personnel are often difficult to implement and expensive for the customer - Sofigate does not have any own visual examples to present to the customer

+ Comprehensive templates for documentation + Effective project management + Continuous improvement	- Documentation handed over to customer in a late stage - No formal feedback session of the project - No implementation plan/release documentation - No end users involved to the project

As seen in Table 10 above, the current process has many strengths, but also weaknesses. The most critical weakness of the current service design process is that it does not include the presence of end users, which would actually use the portal. Those weaknesses are the key points, which will be taken into account, when creating the new service design process.

Portal assessments

Portal assessments analyzing usability for existing customer portals were conducted for two customer portals. Those portals were selected by the criteria that Company A's portal was designed by Sofigate and Company B's portal by a marketing agency. The strengths and weaknesses of the portal elements for Company A and Company B are presented in Table 11 and Table 12 below.

Table 11. Portal elements strengths and weaknesses of Company A.

Company A	Strengths	Weaknesses
Pages	+ Main page contains most of the best practice elements + Similar look on every page	- No info of the nature of the site - No search - No news-section
Navigation	+ Global navigation + Quick link to own tickets	- No search functionality - No breadcrumbs - Only one quick link - No local navigation
Hierarchy	+ Hierarchy visible from main page + Most of the pages easily accessed	- Complicated service catalogue hierarchy

Appearance	+ Object positioning + Typography	- Colours used too restrainedly - Small fonts on the main page - Small navigation menus - Navigation menu background colours
Portal content	+ Forms are simple and contain minimalistic amount of information	- IT oriented terminology - Complicated categorization of service requests - No general help-section available

Table 12. Portal elements strengths and weaknesses of Company B.

Company B	Strengths	Weaknesses
Pages	+ Best practice main page + Similar visuals on every page	- No quick links
Navigation	+ Search and navigation menus + Local navigation menus	- No quick links - Icons on global navigation menu - No breadcrumbs
Hierarchy	+ Hierarchy visible from main page + Most of the pages easily accessed	- Flat hierarchy on service catalogue
Appearance	+ Company's look and feel + Logical object positioning + Informative icons + Typography	- Object sizing - Small body text - Link colours
Portal content	+ Logical and user friendly forms + Help available	- IT oriented terminology - Categorization of business support

As seen in Tables 11 and 12 above, both of the sites have their pros and cons on every element of the portal. Company B has noticeably better usability on its elements than Company A, since it was designed by professionals specialized in portal usability and with significantly higher budget. Company A's employee self-service portal was created

utilizing the standard model offered by ServiceNow and minimized work amount. By fixing the usability flaws, those portals could be enhanced to be more efficient and user friendly.

By pinpointing the key improvement areas for both the current service design process and customer portals and comparing them to best practices, an employee self-service portal concept, which serves the needs of Sofigate, their customers and the end users using self-service portals, can be created.

4 Employee Self-Service Portal Concept Creation

This section presents the employee self-service portal concept, which is the main outcome of this study. The new service design process and employee self-service portal user interface design are included in the concept and they are presented individually. The proposals are synthesized based on the results of the current state analysis and conceptual framework containing findings from best practices. Additionally, this section provides more detailed information concerning how the proposals were formed in subsections 4.2 and 4.4. Furthermore, validation of the employee self-service portal concept is included in this section.

4.0 New Service Design Process

The first proposal created for this study is the new service design process. The service design process chart is illustrated in Figure 20 below.

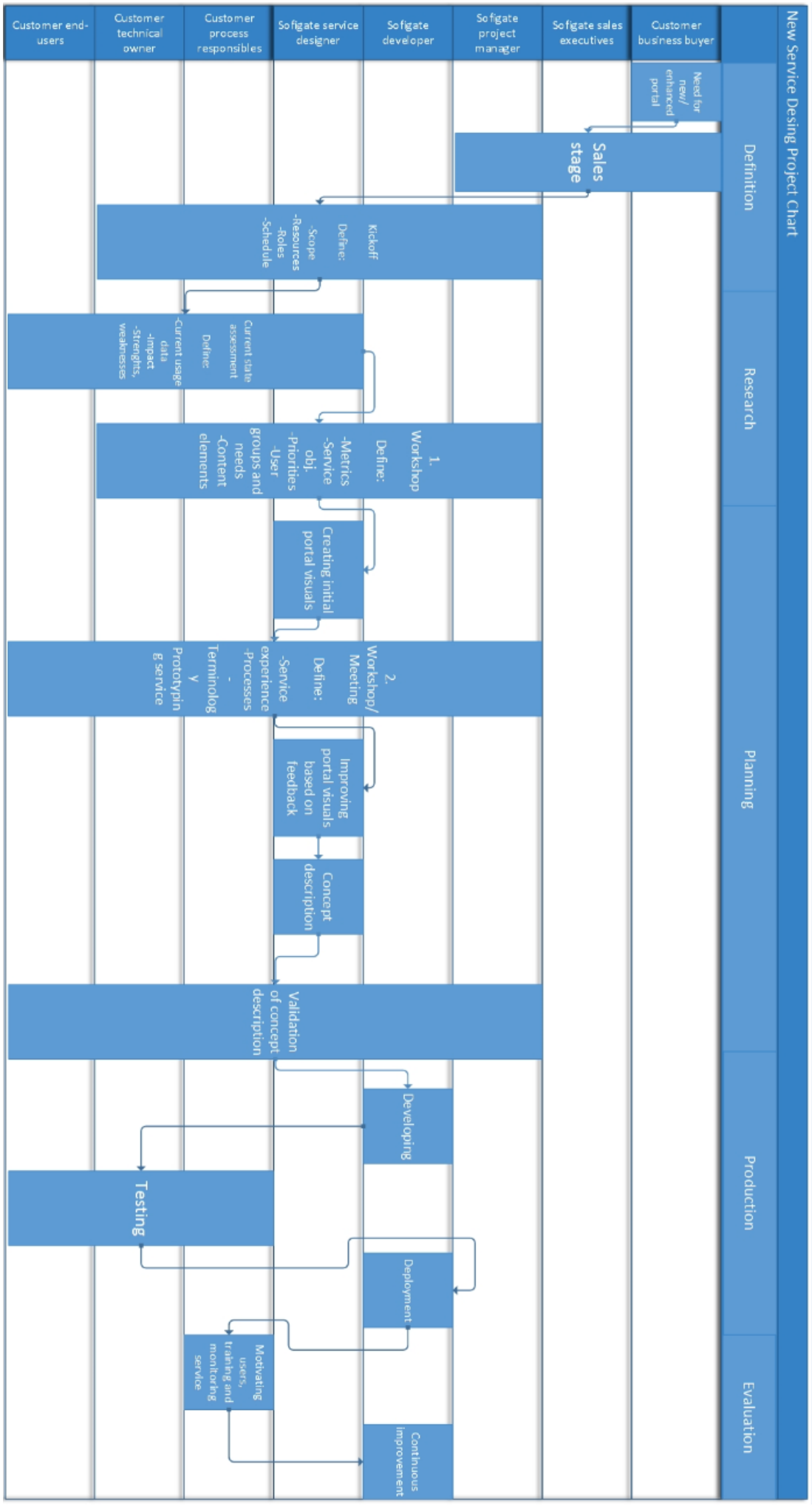
New Service Desing Project Chart
Definition
Research
Planning
Production
Evaluation
Customer business buyer
Sofigate sales executives
Sofigate project manager
Sofigate developer
Sofigate service designer
Customer process responsibles
Customer technical owner
Customer end-users
Need for new/ enhanced portal
Sales stage
Kickoff
Define:
-Scope
-Resources
-Roles
-Schedule
Current state assessment
Define:
-Current usage data
-Impact
-Strenghts, weaknesses
1. Workshop
Define:
-Metrics
-Service obj.
-Priorities
-User groups and needs
-Content elements
Creating initial portal visuals
2. Workshop/ Meeting
Define:
-Service experience
-Processes
-Terminology
Prototyping service
Improving portal visuals based on feedback
Concept description
Validation of concept description
Developing
Testing
Deployment
Motivating users, training and monitoring service
Continuous improvement

Figure 20. The new service design process chart.

Figure 20 above has been mapped as swim lane process chart, which indicates roles on the left side of the chart. Two additional roles, which are customer end-users and Sofigate service designer have been added to this chart based on findings of theory and current state analysis. Main phases of the process have been placed on the top of the chart. Those five phases are originated from theory section's service design chart and they are called as *definition, research, planning, production and evaluation.* Those phases will be explained in detail below.

Definition

The new service design process related to employee self-service portals starts with the definition phase. Definition phase consists of four main activities, which are the following: need for new or enhanced portal, sales stage, initial current state assessment and project kickoff meeting. Those main activities with their key points are illustrated in Figure 21 below.

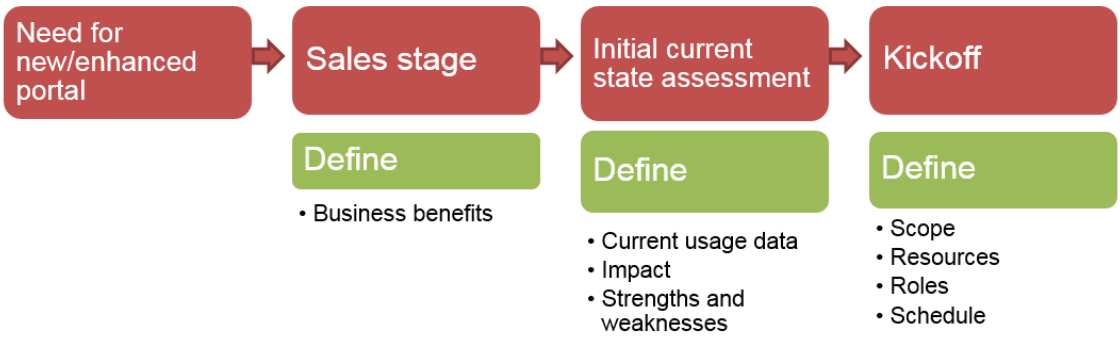

Figure 21. Main activities of definition phase.

As seen in Figure 21, the project starts with customer's need for new or enhanced self-service portal. Sofigate's personnel could also propose a new portal project, if the existing portal is outdated or otherwise in a need of renewal.

Second task, sales stage follows almost the same pattern as defined in the current state analysis. Potential business benefits for the new or enhanced portal are being defined in the sales stage. Furthermore, the participants of the meeting determine whether it is necessary to perform initial current state assessment before the kickoff meeting or not.

If the customer has clear visions for enhancing or creating the new portal, it is not necessary to do initial current state assessment. In other situations, the current state assessment can be useful to be done before the kickoff meeting for defining the portal's most important development areas. Initial current state assessment includes contribution from Sofigate's service designer, end users of the current self-service portal and possibly other customer representatives such as technical owner of ServiceNow or process responsible persons. Service designer defines how end-users utilize data within the portal, impact of the portal and its key strengths and weaknesses with the help of customer representatives or by following how end-users perform their daily tasks within the employee self-service portal. Depending on the scale of the project, initial current state assessment can be additionally conducted remotely without involvement of customer representatives.

Current state assessment data can be utilized for creating a preliminary analysis of the current state of the portal and presented in the kickoff meeting. This analysis data can be utilized for more effective project planning. The kickoff meeting has almost the same pattern as defined in the current state part. In addition, service designer is included and continuous improvement plan has been added for one of the main discussion topics.

Research

The next main phase of service design process is research phase. Research phase may include one or two main activities, depending the characteristics of the project. Those main activities with their key points are illustrated in Figure 22 below.

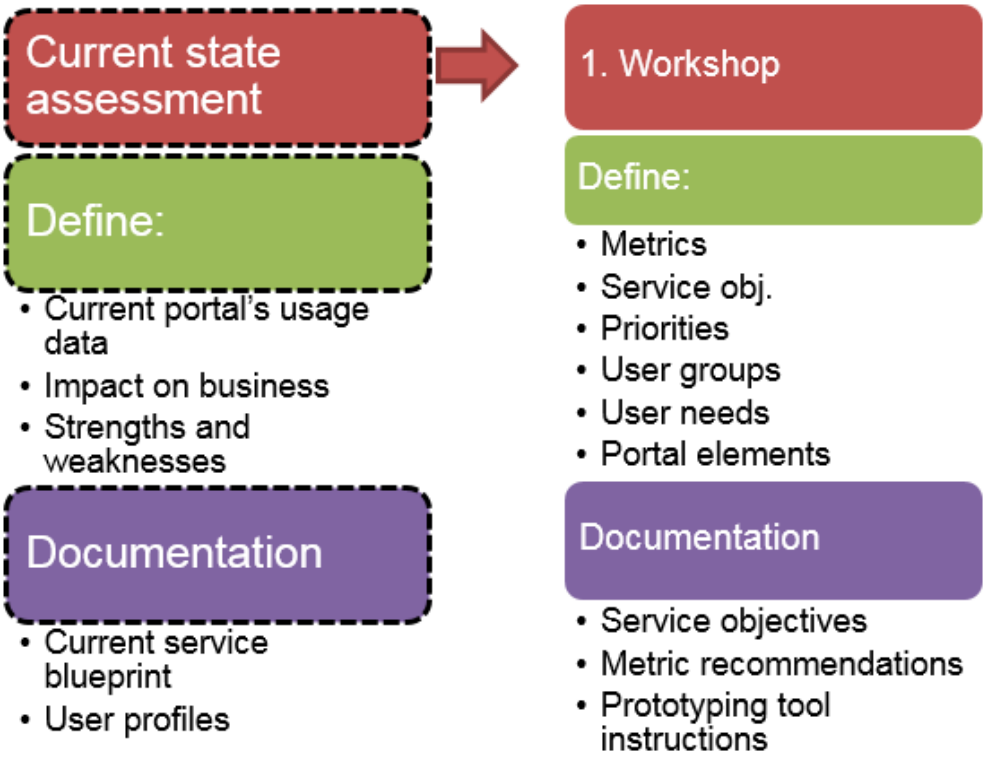

Figure 22. Main activities of research phase.

As Figure 22 indicates, the project can include current state assessment before or after the kickoff meeting depending on the situation. If the portal designers have only a little amount of data concerning target organization's current portal, the current state assessment is necessary to be done after the kickoff meeting, when target organization has provided more data. If the project has been budgeted high, it may be necessary to perform current state assessments before and after the kickoff meeting for getting an enhanced view of end user's aspect. As a result of the initial current state assessment, documentation related to user profiles and current service blueprint is created, which covers current portal processes, interaction points and the most critical people involved in the service.

The second main activity of the research phase is the first workshop. The first workshop participants include: Sofigate developer or developers, Sofigate service designer, Sofigate project manager, customer process responsible persons and customer ServiceNow technical owner. The first workshop is arranged for identifying the employee self-service portal's key metrics, objectives, different user groups and roles, user needs and

portal's key elements. Additionally, workshop participants need to agree, who will create initial portal visuals. If customer creates the visuals, Sofigate needs to provide prototyping tool instructions for the customer. After the workshop, customer should be provided by documentation related to employee self-service portal objectives, its metric recommendations and prototyping tool instructions, if necessary.

Planning

Third main phase of the service design process is planning phase. Planning phase includes five main activities, which are the following: creation of portal visuals, second workshop or meeting, improving portal visuals based on feedback, concept description and validating the concept description. Those main activities with their key points are illustrated in Figure 23 below.

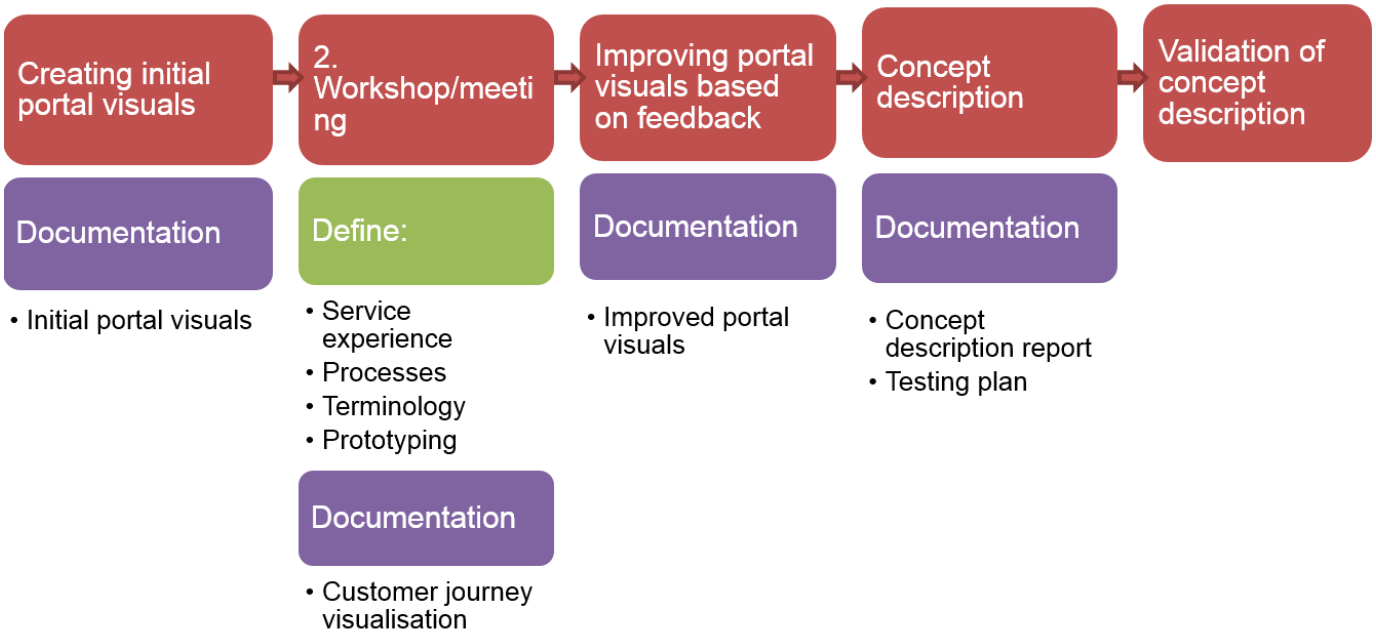

Figure 23. Main activities of planning phase.

As seen in Figure 23, the planning phase starts with portal initial visuals creation done by Sofigate's service designer or customer's representative. Portal initial visuals can be designed by some software meant for designing user interfaces, such as Mybalsamiq. After the initial portal visuals have been created, they will be documented.

Next main activity of the planning phase is second workshop or meeting, where the initial visuals of the portal are being presented by their designer. Those initial portal visuals are being improved during the workshop. In addition to the first workshop participants, few end-users will attend to this meeting for sharing their opinions from the end-user perspective. Additionally, the participants of the second workshop define the service experience of the portal, which incorporates the service stages, its digital and physical environments and interactions from the end user perspective. Furthermore, the participants determine and illustrate the processes within the employee self-service portal, such as incident management process. After the participants have defined the before mentioned matters, end-users will test the portal processes via paper prototypes or any other prototyping tool. When the participants agree that the portal processes and other elements are functional, customer journey can be documented, which indicates all the processes and their different interaction points.

Based on the feedback from the participants of the second workshop, the portal visuals will be enhanced, documented and presented for the project participants again for verification.

After the portal visuals have been confirmed, the service description will be created by Sofigate's service designer. Service description covers all the documentation defined in the previous stages. It contains portal user interface illustrations, portal processes, user profiles, customer journey, service objectives and its metrics. Additionally, service designer creates the testing plan for the new portal including various test scenarios. Finally, service designer presents the service description report to project participants. When the report is agreed by every project participant, project can proceed to the production phase.

Production

Fourth main phase of service design process is production phase. Production phase includes three main activities, which are the following: creation and development work of the portal, portal testing and deployment. Those main activities with their key points are illustrated in Figure 24 below.

Figure 24. Main activities of production phase.

As Figure 24 indicates, the production phase starts with development, which incorporates creation of the portal elements, processes and visuals. Sofigate developer or developers conduct the development work and they utilize the service description report, when creating the functionalities into the portal. After the developers have developed content in the portal, they update the service description report by updating the configuration information related to a specific element. Additionally, the developers perform system testing simultaneously while producing content into the portal. Developers perform activities within the portal and compare the results to the service description report.

After the developers have created content to the portal, the customer representatives such as end-users, process responsible persons and technical owner will test those functionalities. Developers need to produce content to the portal in packages, so the content can be tested in early stage. Customer representatives will document the test results for a testing sheet defined in the planning phase. Based on the results Sofigate developers perform the fixes. After the testing has been conducted successfully, deployment plan document will be created by Sofigate representatives, which contains roles and responsibilities of the deployment activity.

When the portal has been declared to be functional by the customer representatives, it will be deployed, so the end-users can start conducting their activities within the portal. Furthermore, the main activities and other information of the release will be documented by Sofigate representatives.

Evaluation

Final main phase of the service design process is the evaluation phase. The evaluation phase includes five main activities, which are the following: motivating users, portal internal marketing, portal usage training, portal monitoring and continuous improvement. Most of these main activities are performed by the customer representatives, who have participated in the project. Activities of the evaluation phase are presented in Figure 25 below.

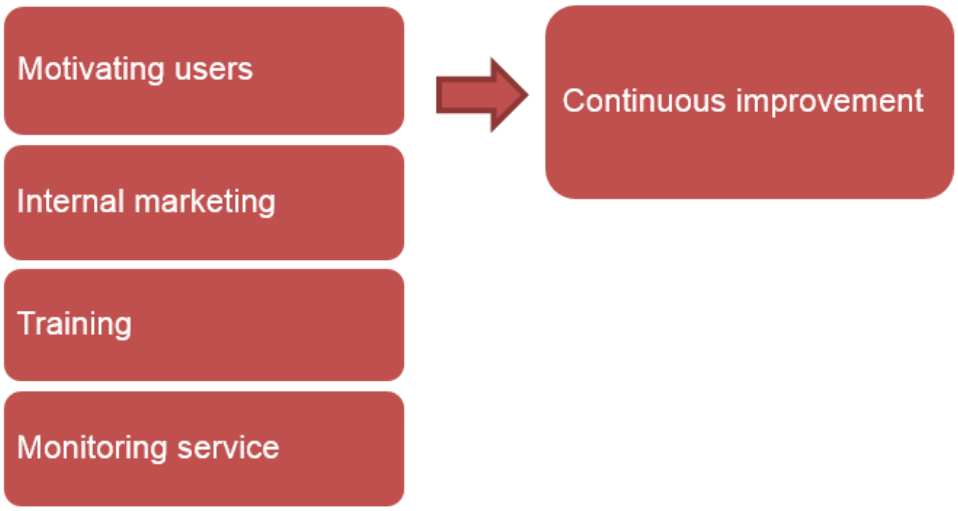

Figure 25. Main activities of evaluation phase.

As seen in Figure 25, the four first steps of the evaluation phase can be performed simultaneously. Customer representatives motivate and train the end users for using the new portal. Additionally, the new employee self-service portal will be marketed via various channels, such as e-mail, intranet, info televisions and trainings arranged for employees. Customer representatives will monitor the portal performance by monitoring metrics set for the portal. Project participants will arrange a feedback session of the project, if they have decided earlier to do so. In the feedback session, project participants give feedback to each other of the different activities performed during the project. Furthermore, the participants validate if the business benefits were reached or not.

When the users have started to use the portal, it will be continually improved based on the continuous improvement plan defined in the kickoff meeting. Illustration of standard continuous improvement process is shown in Figure 26 below.

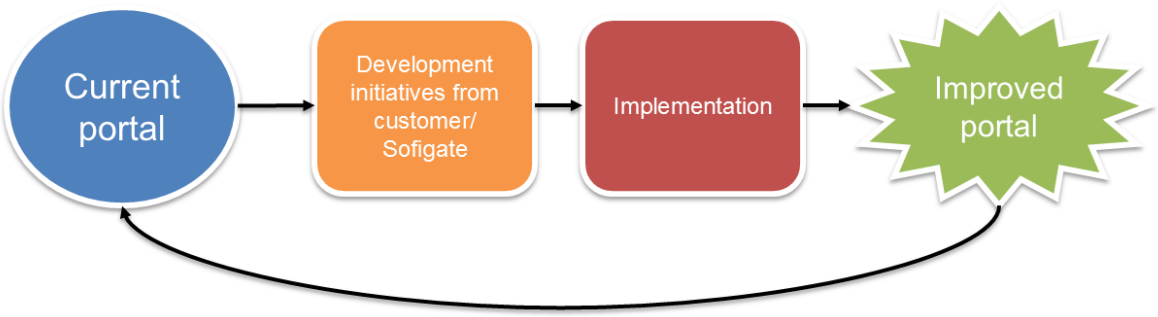

Figure 26. Continuous improvement process.

As Figure 26 indicates, the iterative continuous improvement process starts by development initiative made by either customer representative or certain Sofigate employee. Development initiatives are presented and work amounts are determined. Sofigate developer performs the changes or adds the new features. As a result, the portal has improved and serves the end-users' needs better.

4.1 How the New Service Design Process Was Formed

Current state analysis indicated many weaknesses of the current service design process. Those weaknesses were addressed for creating improved service design process, which increases efficiency and quality of designing and creating portals. Main weaknesses of the current service design process and how they were addressed to the new process are presented in Table 13 below.

Table 13. Weaknesses of current service design process and how they were addressed to new process.

Weaknesses	How they were addressed
- Visuals made by other than Sofigate personnel are often difficult to implement and expensive for the customer	- Sofigate creates the visuals always
- Sofigate does not have any own visual examples to present to the customer	- Recently hired service design and portal experts included to portal projects

- Sofigate does not have any professionals on visual or usability side	- Visual examples created on this thesis to be presented to customers
- Documentation handed over to customer in a late stage	- Service description report handed to customer before developing and updated afterwards
- No formal feedback session of the project	- Feedback session held in evaluation phase if customer agrees
- No implementation plan/release documentation	- Implementation plan and release documentation included
- No end-users involved to the project	- End-users included to the process

As seen in Table 13, all of the main weaknesses of current service design process were addressed, when creating more efficient and quality ensuring service design process.

Figure 27 below describes how the new service design process was formed.

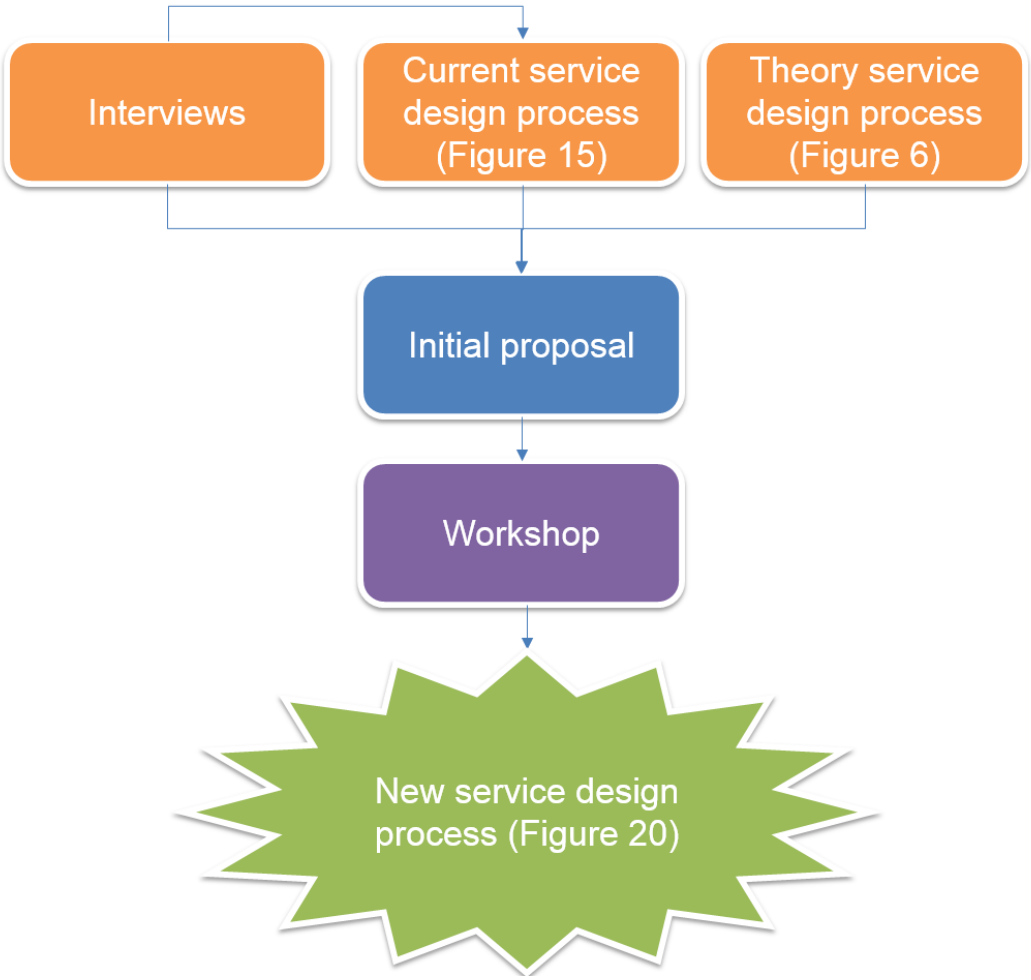

Figure 27. How the new service design process was formed.

As Figure 27 shows, the new service design process forming started with studying service design theory and interviewing Sofigate project managers, which formed the current service design process. The current service design process was used as a basis when the initial proposal was created. Additionally, the interviewees provided opinions for the new process such as involving end-users for designing portals. The most relevant key points from theory regarding service design were included in the initial proposal. Therefore, the initial proposal was formed based on interviews, current service design process and service design theory.

Secondly, the initial proposal was presented in the workshop to the service designer and portal expert. Feedback on the workshop pointed out correcting minor issues only, for instance including continuous improvement as one of the main subjects of the kickoff meeting.

After the modifications were made to the process, the service design process was complete.

Figure 28 below illustrates how the steps to the new service design process were originated.

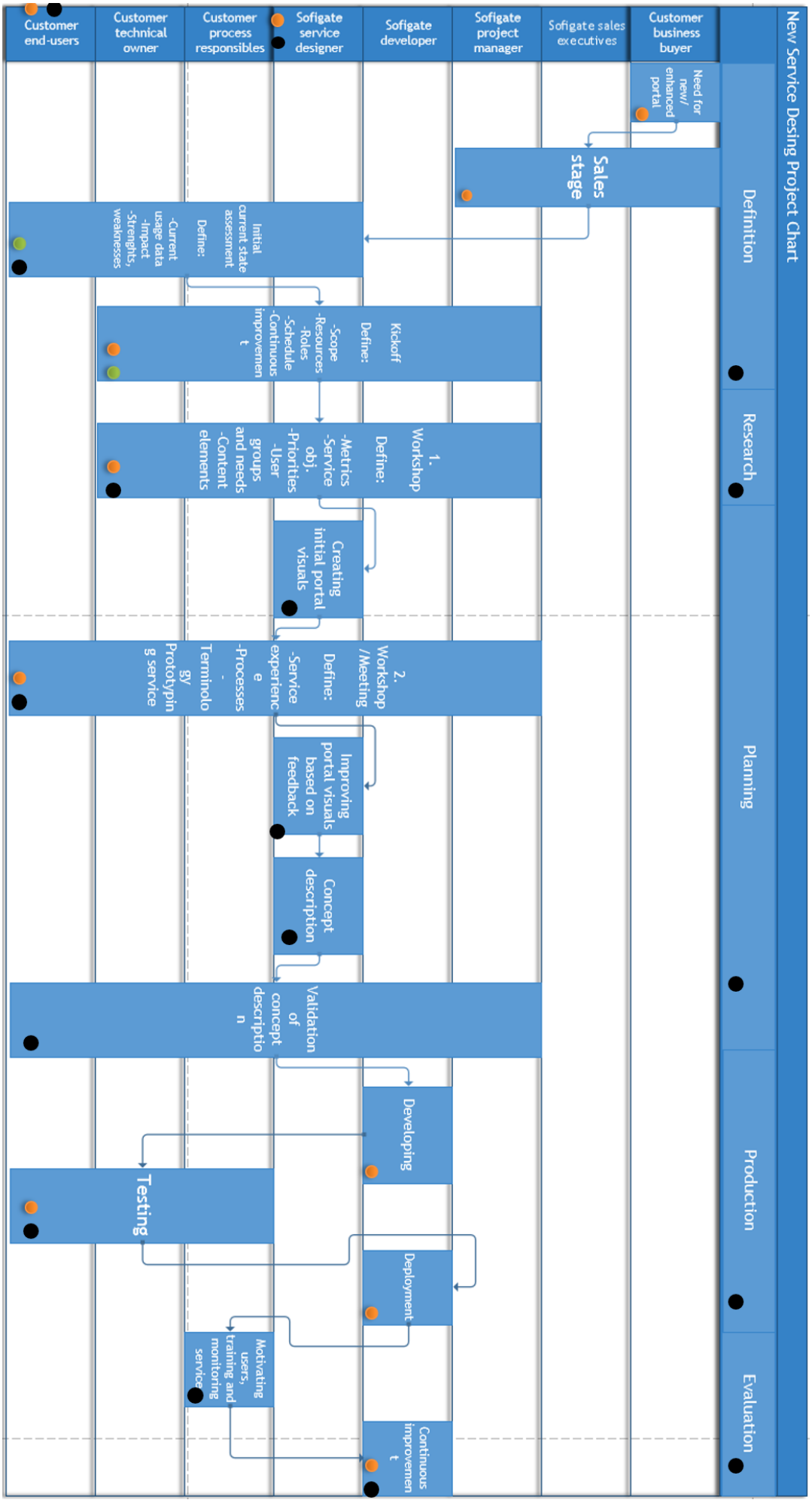
New Service Desing Project Chart
Definition
Research
Planning
Production
Evaluation
Customer business buyer
Sofigate sales executives
Sofigate project manager
Sofigate developer
Sofigate service designer
Customer process responsibles
Customer technical owner
Customer end-users
Need for new/ enhanced portal
Sales stage
Initial current state assessment
Define:
-Current usage data
-Impact
-Strenghts, weaknesses
Kickoff
Define:
-Scope
-Resources
-Roles
-Schedule
-Continuous improvement
1. Workshop
Define:
-Metrics
-Service obj.
-Priorities
-User groups and needs
-Content elements
Creating initial portal visuals
2. Workshop /Meeting
Define:
-Service experience
-Processes
-Terminology
Prototyping service
Improving portal visuals based on feedback
Concept description
Validation of concept description
Developing
Testing
Deployment
Motivating users, training and monitoring service
Continuous improvement

Figure 28. How steps to new service design process were originated.

The activities in Figure 28 have been marked with circles, which utilize different colours. Those colours indicate where the sections of the service design process have been originated from. The colour codes are explained below.

= Service design theory

= Current service design process and interviews

= Workshops

Figure 28 shows, which modifications of steps have been originated from service design theory and which from analysing current service design process and interview material. Additionally, Figure 28 shows that two steps have been modified based on feedback from the workshop.

As Figure 28 shows, most of the stages have been modified based on service design theory by including additional matters to define, which need to be taken into account in a specific stage. Based on service design theory, new stages have been added to the process for achieving better results, such as concept description and training of the users.

4.2 Employee Self-Service Portal User Interface Design

The second proposal of this thesis is an example user interface design of a user friendly employee self-service portal. This user interface design follows Nielsen's heuristics and usability best practices defined in subsections 2.5 and 2.6. Those best practices were compared to Sofigate's customer employee self-service portals in order to find their key strengths and weaknesses for building the new portal user interface design. Additionally, a workshop with service design and portal experts was held in order to get comprehensive view for a superior employee self-service portal.

The illustration of the employee self-service portal was started by determining the functionalities that end-users could conduct within the portal. Based on the findings of the current state analysis, the most common functionalities, which are included in employee

self-service portals are the following: manage IT services, search for information, manage requests and check or update user's profile information. Those functionalities were also added to this portal.

Pages

The main page of the portal is the most important page of the entire portal. The main page was designed carefully in order to create on illustration of user friendly portal and preserve users interest in the portal after arriving to the site. The illustration of the portal is shown in Figure 29 below.

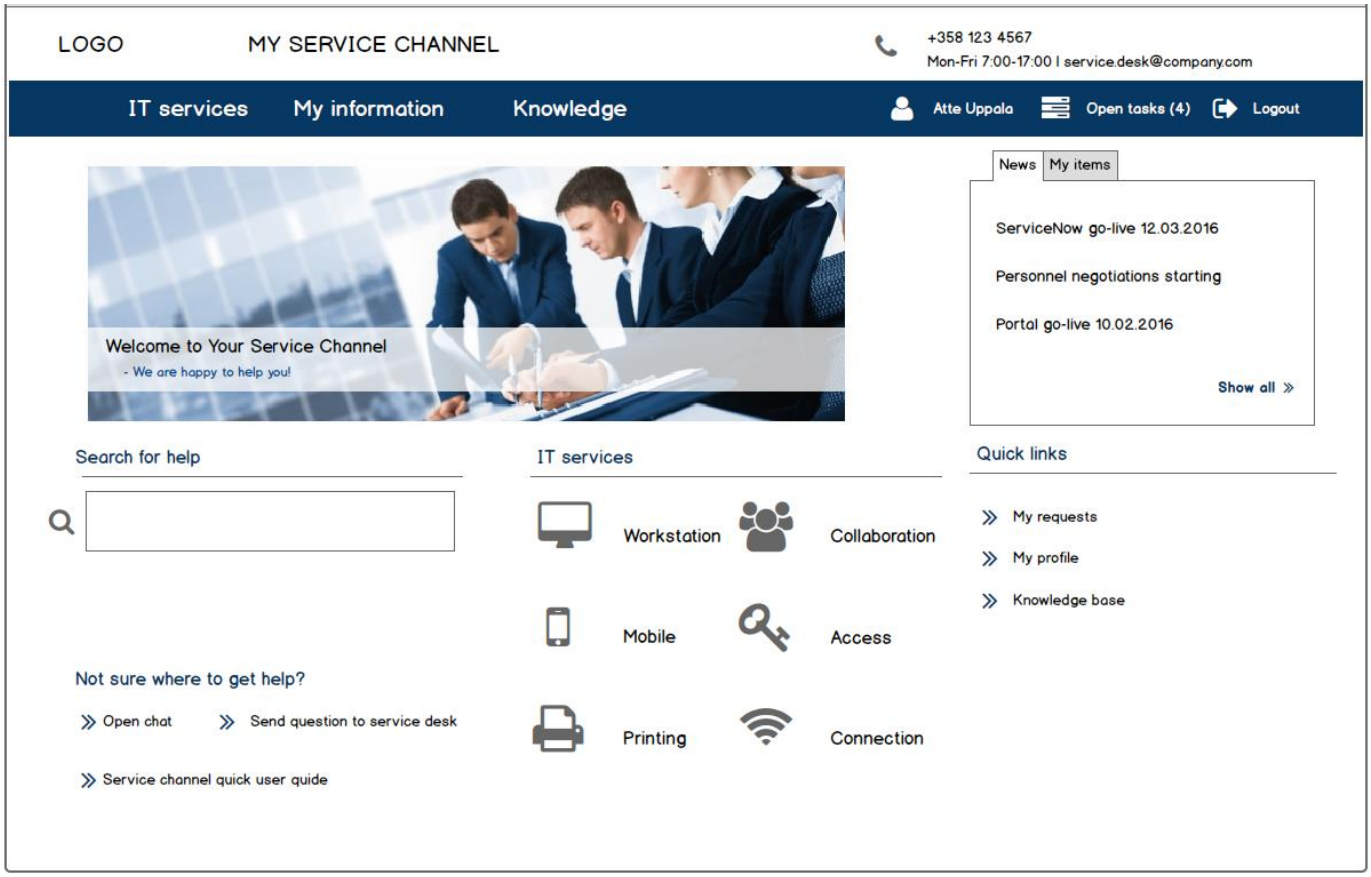

Figure 29. Main page of employee self-service portal.

As seen in Figure 29, the example employee self-service portal main page illustration contains all the best practices typical for a main page. The main page contains a company logo located in the top left corner of the header, which also functions as a link to the main page. The slogan of the portal "My service channel" is located next to the logo, which indicates the nature of the site. Next to the slogan in the top row of the header

contact information for users, who prefer to use more old fashioned methods contacting service desk, is located. Bottom row of the header contains information of the user logged in to the portal, user's open tasks and logout button. A refreshing image including a welcome message is located under the header. A tab menu including news and items assigned to the user logged in to the portal is located on the right side of the image. This tab menu has been added to the main page as an inducement for the user of the site. Additionally, the main page contains different navigation options such as quick links, search functionality, service navigation menu and other links navigation. The main page has been designed to contain only as minimalistic information as possible, but still contains all the necessary elements.

Other pages follow the same visual guidelines as the main page, so the user feels that he/she is performing activities within the same portal. The global navigation menu leads to content pages, which contain a search function and the same links as the main page does. Content pages have been designed to be containing as little information as possible.

Navigation

This best practice user interface design supports different navigation options for different types of users. Users who prefer to find their information through navigation menus have options to choose from global navigation menu on the header and IT services navigation menu on the main page. Additionally, a search option utilizing predictive search property is easily located on the main page. Quick links for accessing most utilized content are also located on the main page for more advanced users. The main page offers a link to every page of the site through the navigation menus. Still, the main page is not overloaded with information. This has been done by creating a navigation menu that changes, when it is clicked. The changing navigation menu is presented in Figure 30 below.

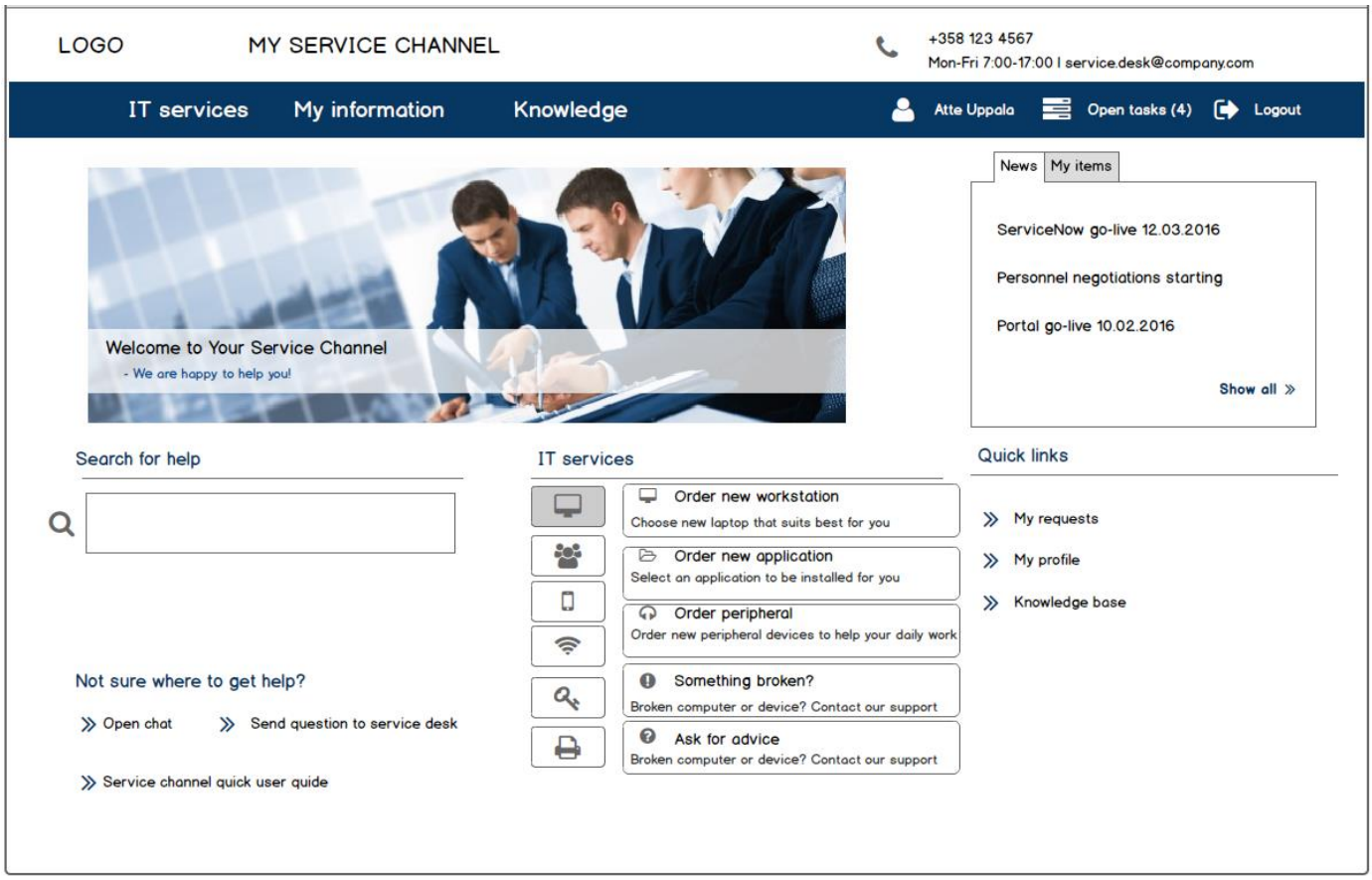

Figure 30. IT services tab selected on main page for preserving space.

As Figure 30 illustrates the changing navigation menu above, the navigation menu shows links with their descriptions, whenever a menu item is clicked. It enables users to explore the content of the site without leaving the main page. In Figure 30 above the user has clicked “Workstation”, which opens every link related to it for the user. This navigational functionality preserves space and improves the user experience significantly.

The best practice user interface design utilizes local navigation menus also in the content pages. The local navigation menus are presented in Figure 31 below.

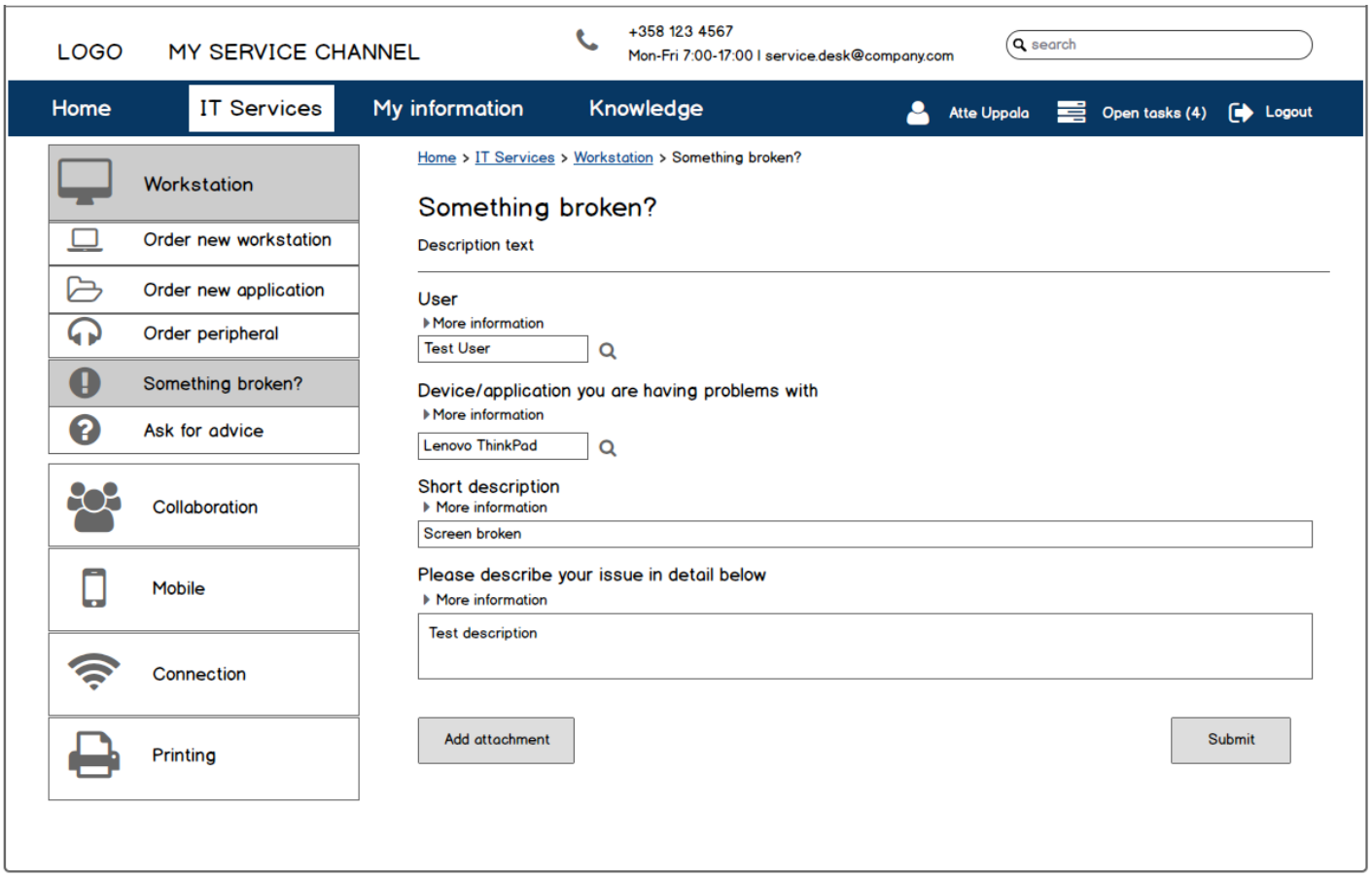

Figure 31. Local navigation menus on “something broken” -content page.

As Figure 31 presents, same “IT services” navigation menu, which is positioned on the main page, is located on the content page as well, but in vertical format. It functions in the same way as the main page’s similar navigation menu: opens certain objects whenever one main category is clicked and hides other parts. This enables users to browse forms freely, without leaving the content page. Furthermore, the content page contains the same global navigation menu and breadcrumbs menu. Breadcrumbs navigation menu indicates the user’s position within the portal.

Hierarchy

Hierarchy of the portal is revealed to the user via the main page’s navigation menu. The portal uses both deep and flat hierarchies. The IT services section, which has the service catalogue functionalities utilizes deep hierarchy. Other pages utilize flat hierarchy instead. Hierarchy of the site is illustrated in Figure 32 below.

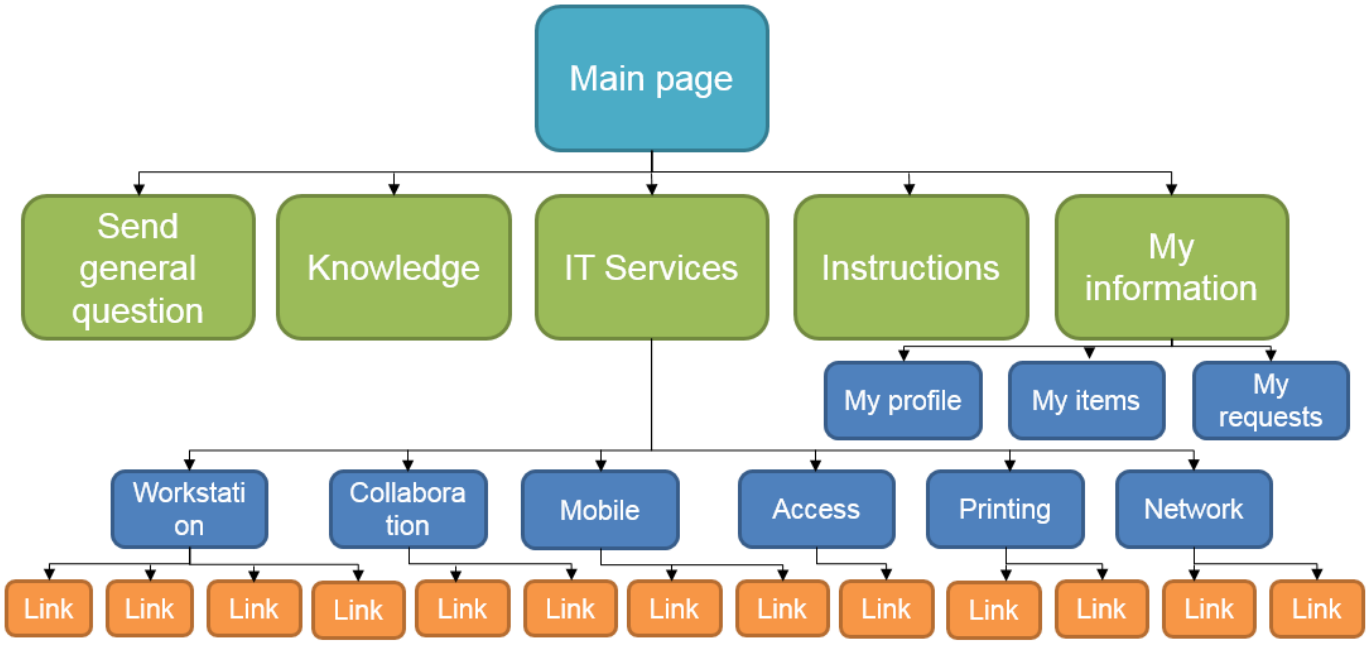

Figure 32. Hierarchy of the site.

As Figure 32 indicates, the hierarchy of the site is quite easy to understand. Content can be easily accessed with only a few clicks. Although the “IT services” section seems that the lowest content pages are accessed through two content pages, they can be accessed from the main page also as Figure 30 indicates. Hence, users could choose from flat hierarchy or deep hierarchy when accessing the content.

Appearance

The best practice portal’s appearance has been designed to appear in the same way as across the entire portal. Objects have been positioned similarly in order to facilitate recognition among the users. Global navigation is located in the same place on every page. In the content pages, global navigation contains a separate link to the main page and a search function for the users who prefer to use search as a navigation method. Overall, objects have been positioned in such a way that there is always enough space for separating different objects on the pages. Figure 33 below presents the tab menu, which was positioned for avoiding the main page to be overflowing with information.

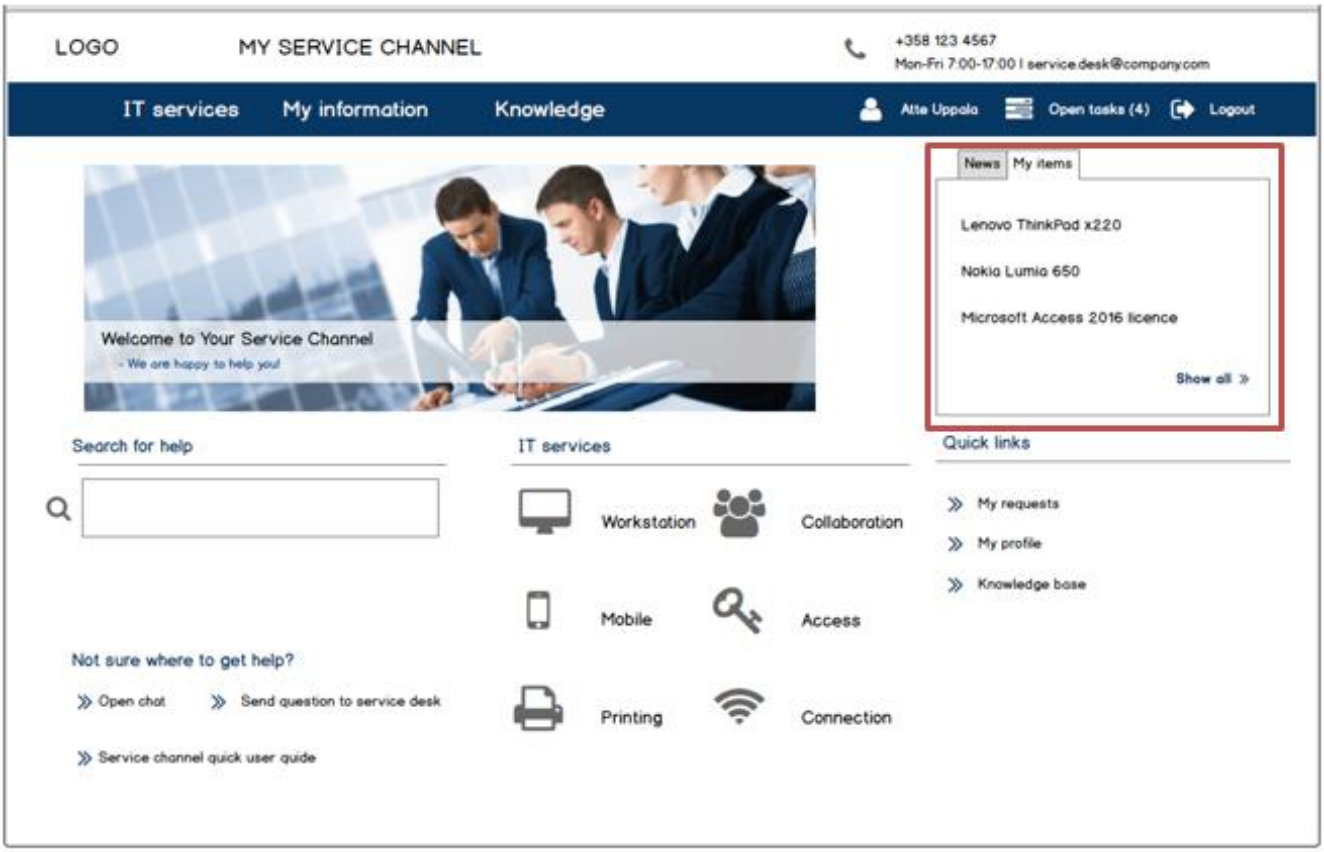

Figure 33. Tab selected on main page for preserving space.

As Figure 33 indicates, the tab menu preserves space from the main page instead of placing both sections within the tab menu as separate items.

The forms have been designed based on the portals from the current state analysis. Text is positioned on the left side and questions are separated clearly like shown in Figure 31. The fonts of the portal are adjusted to be easily readable, but still they do not dominate the view. Portal colours have been used restrainedly across the site. The bottom row of the global navigation menu has been coloured by dark blue, in order to draw the user's attention and indicate the navigation as a starting point. The background of the portal is white and text is black or blue, which is optimal from the usability aspect.

Portal content

Terminology within the portal has been designed so that every user understands the content without the knowledge of IT terminology. The goal has been to avoid IT terminology. For instance, there is no separation between service request and incidents. Users can categorize their problems easily with the “IT services” menu categorization. Even if the users cannot categorize their problems, they can send a general request to the service desk, call or email them. Furthermore, the best practice portal offers a general instructions section for using the portal. In addition to the help section, users could open a chat with service desk personnel for assistance with the portal usage. Every form of the portal offers instructions for using the form and every question on the form has their own explanations. Users should always be able to use the portal, since help is offered through various sources.

4.3 How Employee Self-Service Portal User Interface Design Was Formed

As mentioned before, the best practice user interface design was generated based on usability theory, the findings of the current state analysis and especially from the portal assessments. Table 14 below illustrates the strengths and weaknesses for each portal element. Those strengths and weaknesses were revealed on the portal assessments. Table 14 additionally presents how those strengths and weaknesses were addressed on the new portal user interface design.

Table 14. Strengths and weaknesses of existing customer portals and how they were addressed for making new portal user interface.

Element	Strengths	Weaknesses	New portal
Pages	+ Similar look on every page	- No info of the nature of the site - No search - No news-section - No quick links	+ Title added + Search function + News + Quick links + Similar look on every page
Navigation	+ Global navigation	- No search functionality - No breadcrumbs - No local navigation	+ Search function + Global navigation + Local navigation + Breadcrumbs
Hierarchy	+ Hierarchy visible from main page	- Complicated service catalogue hierarchy	+ Hierarchy visible and easy to understand

	+ Most of the pages easily accessed		+ Pages easily accessed + Simplified service catalogue hierarchy
Appearance	+ Object positioning + Typography	- Colours used too restrainedly - Small fonts on the main page - Small navigation menus - Navigation menu background colours	+ Enough big fonts and objects + Colours used restrainedly but not too restrainedly + Best practice colours + Logical object positioning + Informative icons
Portal content	+ Forms are simple and contain minimalistic amount of information	- IT oriented terminology - Complicated categorization of service requests - No general help-section available	+ Simple forms + General terminology + Simple categorization of tickets + Help for forms and general help section included

As seen in Table 14, all of the main usability strengths and weaknesses for each element of the existing customer portals were addressed, when creating the best practice user interface design.

Figure 34 below describes how the new service design process was formed.

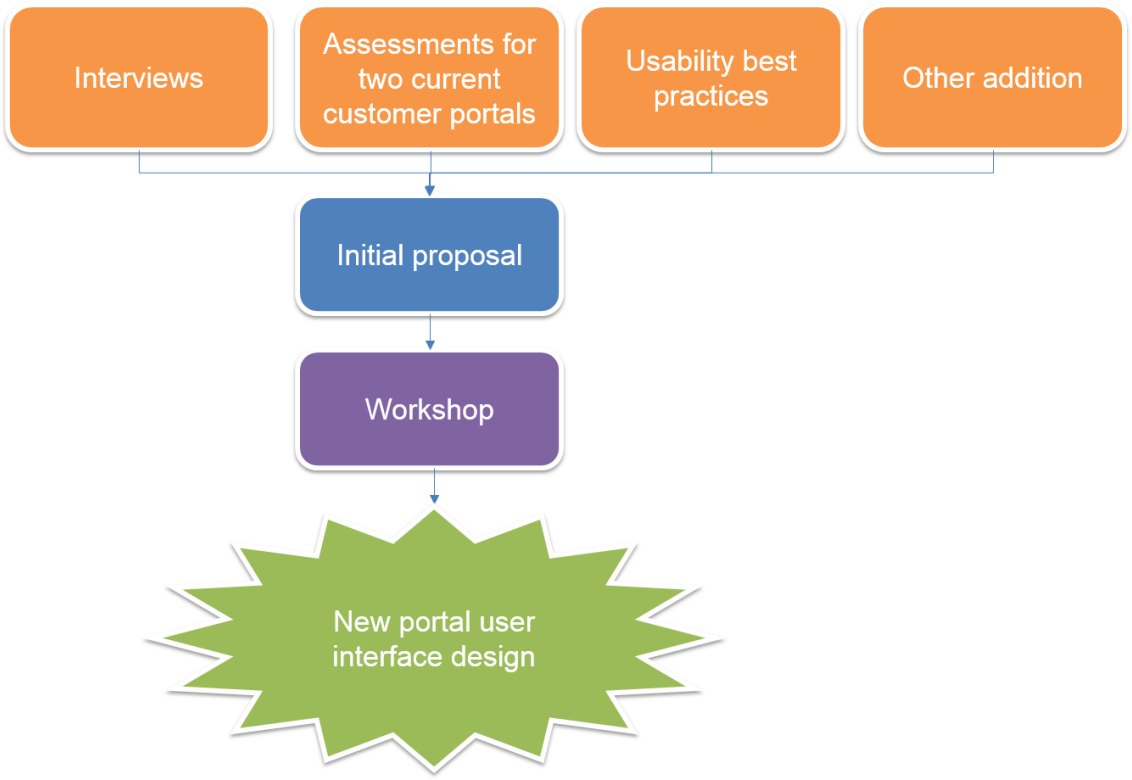

Figure 34. How the new portal user interface design was formed.

As Figure 34 shows, forming the employee self-service portal user interface design started with studying usability theory, interviewing Sofigate project managers and conducting two portal assessments for existing customer portals. Those data sources defined the elements that were added into the new portal illustration. Additionally, the portal assessments defined the basic layout for the pages of the new user interface design. Next, the user interface design was further improved based on my own vision for making a better appearance to the portal and improving its usability.

After the initial portal user interface was created, it was presented in the workshop. Small modifications for the main page were made in the workshop. For instance, a tab menu was added to the main page for preserving space.

When the final modifications were done, the employee self-service portal user interface design was complete.

Figures 35 and 36 below illustrate the origin of different elements for both main page and content page.

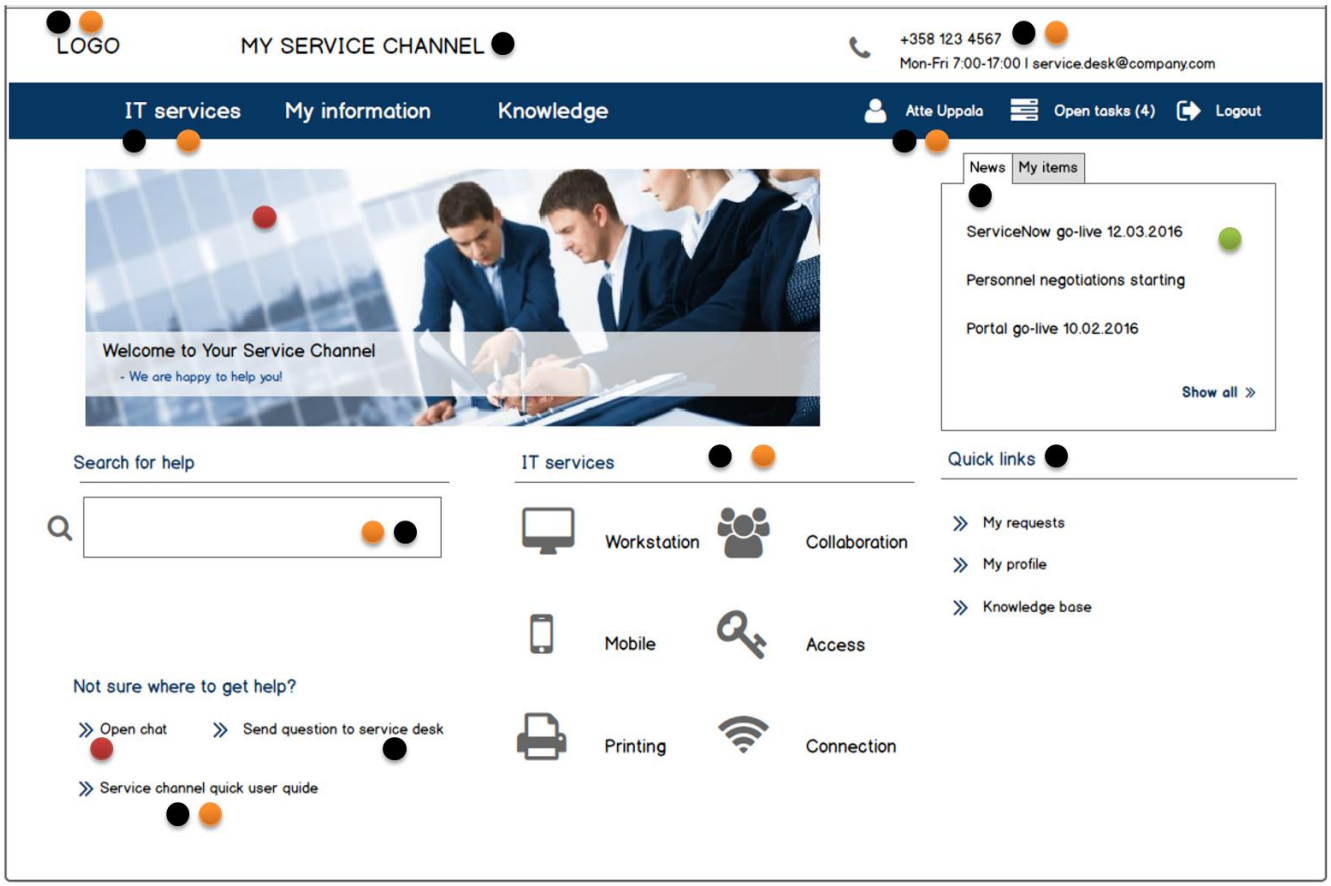

Figure 35. How elements to main page of portal user interface design were originated.

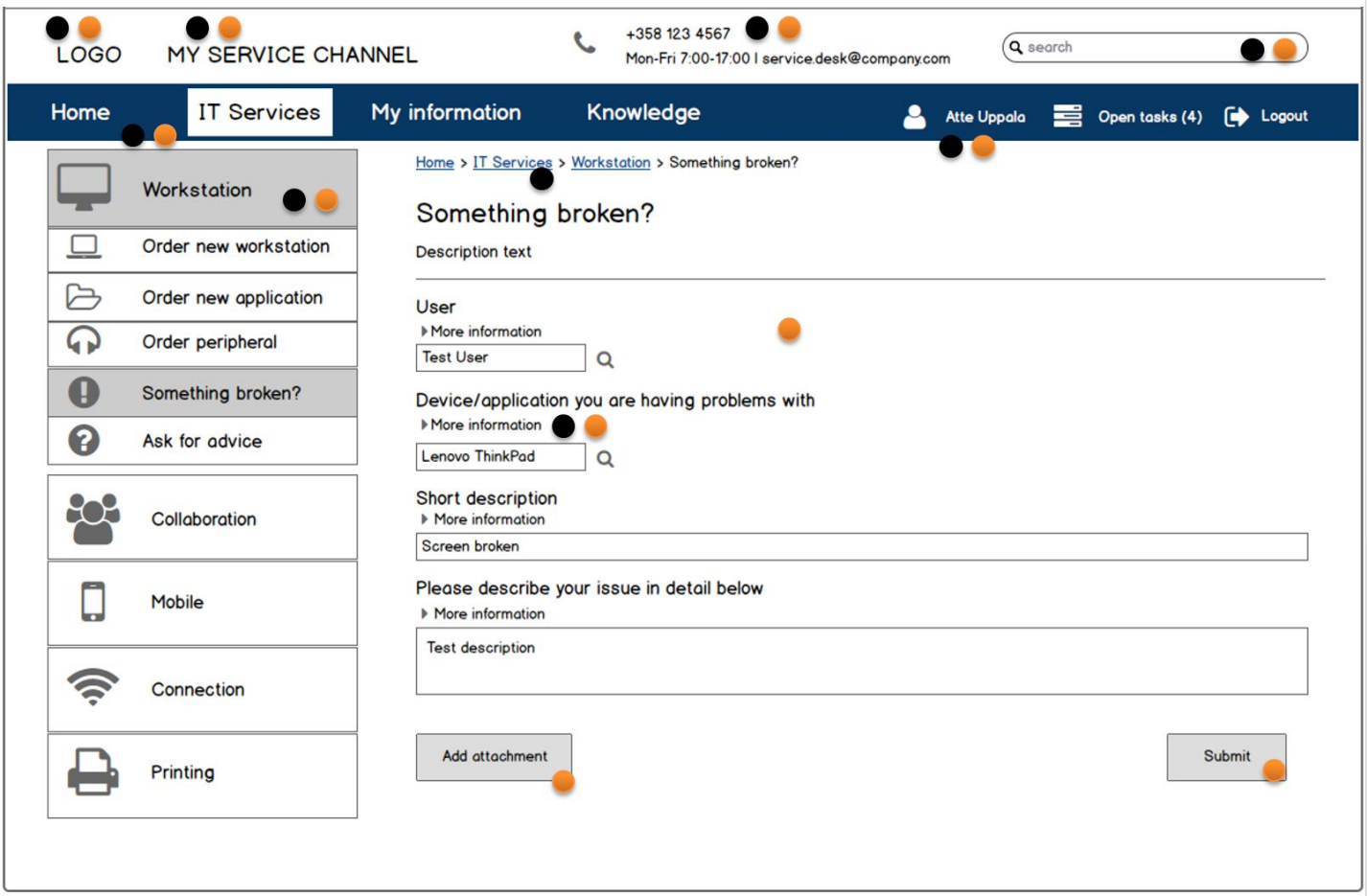

Figure 36. How elements to content page of portal user interface design were originated.

The elements in Figure 35 and 36 have been marked with circles, which utilize different colours. Those colours indicate where the elements of the best practice user interface design have been originated from. The colour codes are explained below.

= Usability theory

= Portal assessments and interviews

= Workshops

= Other addition

Figures 35 and 36 show, which elements of the portal design have been originated from usability theory and which from assessments for existing customer portals and from interview material. Additionally, Figure 35 presents that the tab menu has been added to the main page based on feedback from the workshop. Furthermore, Figure 35 indicates other additions that were placed based on my own vision.

As seen in Figures 35 and 36, most of the portal elements were originated from portal assessments and interviews. Their usability was enhanced based on the key findings of theory, for instance making texts larger or colours follow the usability best practices. Furthermore, some elements were added based on theory that were not in the current portals such as breadcrumbs navigation. Hence, some elements were added based on own vision such as the main page's image.

4.4 Portal Concept Validation

After the new employee self-service portal was produced consisting of the new service design process and best practice portal user interface illustrations, the proposals were presented to Sofigate's thesis instructors. The content of the proposals was reviewed thoroughly. Sofigate thesis instructors presented development suggestions to the service design process, such as including business benefits into the sales stage.

Sofigate instructors gave positive feedback to both of the proposals. The service design process ensures better quality, customer satisfaction and allows project participants to follow predefined steps easily. Furthermore, Sofigate instructors stated that the new process enables easier selling of the portal projects, since it has been conceptualized. The best practice portal user interface design enables better sales possibilities for Sofigate, when selling employee self-service portal projects to the customers. The best practice user interface design can be presented to the customers in the sales stage so that they are able to grasp, what an employee self-service portal is and what it is capable of. Overall Sofigate instructors stated that the new employee self-service portal concept has a significant impact to their business and they were happy with the results.

The new service design process with its predefined steps will be utilized in the upcoming portal projects. The best practice user interface design will be used as a basis when designing portals with the customer. Additionally, the portal user interface design will be used as a model when creating a pilot employee self-service portal for Sofigate.

5 Discussion and Conclusions

This section contains the summary of the study and some practical recommendations and suggestions made for Sofigate in order to proceed with the recommendations. Additionally, this section contains an evaluation of the project, comparison of objective and outcome and evaluation of the validity and reliability of the study.

5.0 Summary

The objective of this study was to create an employee self-service portal concept for Sofigate. The portal concept consists of two different proposals, addressing the main areas Sofigate needed to improve in context of employee self-service portals. The first proposal produced during this study is a service design process for designing and creating user friendly employee self-service portals together with the customer. The second proposal is an example employee self-service portal user interface design, which follows usability best practices.

In order to create the employee self-service portal concept successfully, this study was conducted as Figure 37 illustrates below.

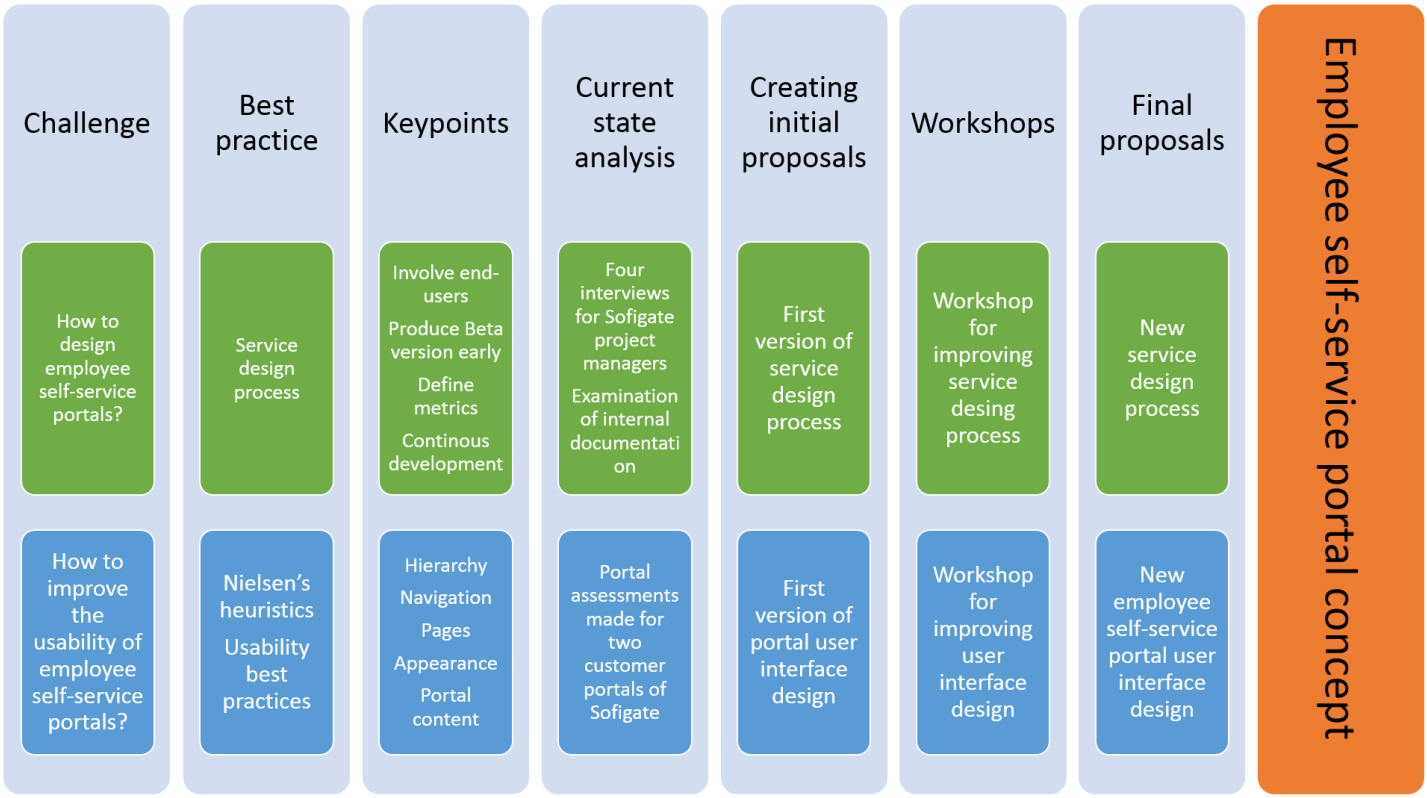

Figure 37. Summary of creation of employee self-service portal concept.

As Figure 37 indicates, this study started by defining the key areas for improvement in terms of concepting employee self-service portals. These questions asked were:

a. How to design and create employee self-service portals successfully together with the customer?
b. How to improve the usability of employee self-service portals?

Secondly, service design theory was studied for defining best practices of portal service design. As a result of studying service design, the following key points were identified: involving end-users to portal designing, production of beta-version in an early stage, portal metric definition and portal continuous improvement. Nielsen's heuristics and website usability best practices were studied for determining how user friendly portals can be successfully created. Key points for designing user friendly portal were identified through

Nilsen's heuristics and usability best practices of different portal elements. The best practices are presented in detail in Section 2. These best practices and their key points were utilized when creating the proposals in Section 4.

Thirdly, a current state analysis was conducted covering the topic areas of both proposals. The current service design process was mapped by performing four interviews with Sofigate project managers and examining Sofigate's internal documentation, such as portal project plan and portal specification documentation. A current state analysis for existing Sofigate's customer portals was conducted by performing two assessments, which analysed the usability of different elements of an employee self-service portal. The strengths and weaknesses of the portals were listed in subsection 3.2 and utilized when creating an example user interface design in subsection 4.3.

Fourthly, as a result of analysing the key findings of theory and current state analysis, initial proposals were created. After that, the proposals were presented to Sofigate's service designer and portal expert. Based on the feedback, changes in the proposals were made, which produced final versions for both proposals and a new employee self-service portal concept. For details, see Section 4.

Finally, the employee self-service concept was validated together with Sofigate representatives.

As a result of the new employee self-service portal concept, Sofigate can now design and create more effectively user friendly portals by following predefined steps of service design process, involve the right people in different stages and produce documentation after each specific stage. Furthermore, Sofigate can utilize portal user interface examples in the design phase for achieving higher quality in portal usability. Overall the concept enables Sofigate to design and create portals with better quality, more efficiently and achieve higher customer satisfaction. Still, it needs to be taken into account that the concept needs to be tested in a portal project before the results can be declared.

5.1 Practical/Managerial Implications

In order to proceed with facilitating and enhancing the employee self-service portal concept, Sofigate needs to perform specific actions. Those actions are illustrated in Figure 36 below.

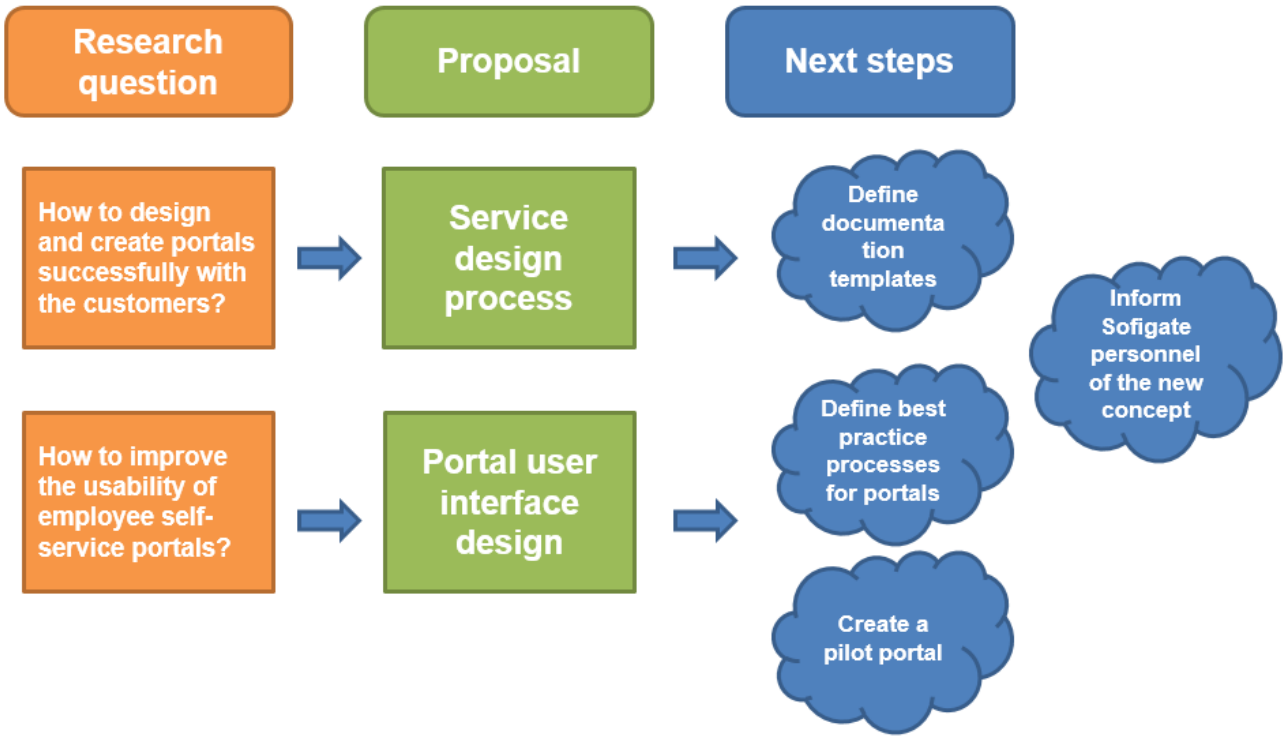

Figure 38. Next steps proposed to be done.

As Figure 38 indicates, next steps towards the proposals produced for this thesis have been presented. The aspects discussed below should be considered by management. It is recommendable that key Sofigate persons are involved in the next steps.

Define documentation templates

The new service design process has multiple new documentation types such as user profiles and customer journey visualisation. In order to document them and provide them to the customer, their templates need to be created with example information. Creating templates ensures the efficiency of the service design process.

Define best practice processes for portals

The example best practice portal illustration covers the elements and some visual best practices but does not cover the portal's processes. The processes such as incident

management and order fulfilment should be included in the concept as well. By including the processes in the concept, Sofigate would achieve even higher efficiency when designing the processes with customers.

Create a pilot portal

Sofigate should create a demo portal, which would match the best practice portal illustrations. This would enable more convincing demoing of the portal in the sales stage. Customers most likely appreciate a portal, which is actually functional than portal illustration images.

Inform and train Sofigate personnel to use the concept

When the above mentioned steps have been carried out, the Sofigate personnel should be informed and trained to use the concept. Especially project managers should be informed and trained to utilize the concept, since they are the persons who deal with the portal projects the most.

5.2 Evaluation of Thesis

The main goal of this thesis was to successfully create an employee self-service portal concept in order to increase the efficiency of designing and creating portals at Sofigate. This was done by creating a service design process with pre-defined roles and steps. Additionally, an example user interface illustration of best practice employee self-service portal was produced for boosting the design stage with the customer. Those goals were achieved.

The employee self-service portal concept could have been even more comprehensive, if processes such as incident management and product ordering processes had been included in the concept. It was decided that processes within the portal were left out, since they would make the scope of this thesis too large. The representatives of Sofigate stated that the new portal concept will be deployed when executing upcoming portal projects. That can be considered a decent indicator to measure the successfulness of the study. Still, the portal concept needs to be tested in a portal project in order to measure the results of this study.

5.2.1 Outcome vs. Objective

At the beginning of this study, the objective was given to conceptualize employee self-service portals, since Sofigate did not have a pre-defined pattern for conducting such projects and did not have any visual examples to present to their customers.

The outcome of this thesis was conceptualized employee self-service portals containing a new service design process and best practice portal user interface design. Although the processes within the portal were not included, it can be said that the objective to create an employee self-service concept was achieved completely.

5.2.2 Reliability and Validity

Reliability can be described as an assessment whether the same findings would be achieved if the study was repeated, or if someone else would have conducted it (Golafsani, N. 2003). First of all, the research methods were reviewed by the instructors of this thesis who approved that they were valid. Secondly, weekly status meetings related to the thesis were held with Sofigate steering group where the quality of the content and methods were reviewed. Thirdly, enough interviews were conducted with Sofigate project managers. The interviews provided reliable results, since they indicated the same results mostly. The interview questions were chosen by the criteria that the answers would not be predictable. Fourthly, there was enough documentation to be analyzed that included portal design documentation and specification documentation, which was optimal for this study's purposes. Finally, enough portals were analyzed comprehensively, which indicated key usability strengths and weaknesses.

Validity of a research measures whether the research methods are valid for achieving the intended results (Golafsani, N. 2003). The main goal of this thesis was to answer the following question: *How to create an employee self-service portal concept successfully?* Two different sub-questions were additionally formed: *How to design and create employee self-service portals successfully together with the customer?* and *How to improve the usability of employee self-service portals?* Those research questions were formed based on the business challenges.

For answering to the above mentioned research questions and ensuring the validity of this study, the following procedures were conducted. First, relevant theory including service design and usability best practices were selected. The chosen theory fits well for the creation of a service design process and for portal user interfaces. Secondly, based on the studied theory, questions for the interviews were formed and methods for the portal assessments were selected. Interviews with Sofigate project managers indicated clearly the current service design process. The interviewees were selected since they have been working the most with employee self-service projects and know the process well. The portal assessments indicated their most common strengths and weaknesses from the usability aspect. The portals were chosen by the criteria that one was designed by Sofigate and the second by a marketing agency. This provided a comprehensive view for creating a new portal user interface design. Based on the comparison of the conceptual framework and the key points obtained from the current state analysis, the proposals for this study were created. Weekly meetings with Sofigate instructors ensured that correct methods were used. This study can be declared to be valid since the goals of the thesis were achieved completely.

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Appendix A - Interview 1 memo

THESIS 2016

Memo

Feb 15, 2016

THESIS INTERVIEW

Place	Sofigate Office
Time	Feb 15, 14.00 – 15.00
Present	Atte Uppala
	Sofigate Project Manager A

- **How design process is typically handled with the customer?**

Sales stage:
In sales stage, customers are typically demoed some branded portal. Portal visuals are typically more important to customers than their functionality. Mockup is created in the sales stage some times. Business executives and project manager are involved to the sales stage.

Kickoff:
In kickoff stage some example portal (if agreed with other customer) is typically demoed. For example customer XYZ has agreed that their portal can be demoed. Sofigate project manager, developer, customer technical owner and their process responsible person are involved.

First workshop:
Usually portals are designed utilizing flap board, such what functionalities do we want there like incident, request, news etc. For example, customer ABC wanted to have the

portal visuals match intranet visuals. Visual guidance (colors and pictures) is often provided by Customer Company. Customer project manager, communication person, some process responsible are involved from customer side. The problem is that those persons are often too technical. In the future, perhaps end users?

Second workshop/meeting:
New mock up is created for next meeting, which are used for making new plans. Mockup is enhanced in the meeting. Meeting is held via LYNC or physically. Customer validates with marketing, that can they use their image bank for images placed in the portal.

Development:
Fast development to ServiceNow, which enables easier testing in earlier stage.

Testing:
Processes are typically being tested. Finally in the testing stage translations for Finnish and Swedish are often made, which is in too late. In the future end-users could test this.

Implementation
Portal is moved to production and Word document of portal is created and sent to the customer.

- **How customer portals are being planned? Does Sofigate create design documentation? Who designs the portals and how?**

See above.

- **Which are the most typical elements and functionalities that customers want to their portals?**

Incident, request, my tickets and approvals. Many customers do not have approval licence for their ServiceNow instance and they want to integrate other services into Servicenow, such as SAS reporting tool or some other service directly into the ServiceNow view without the user even noticing that he/she is using other service from ServiceNow.

- **What kind of things are challenging for you and customers, when designing portals?**

They want to customize main page and otherwise they want to have ServiceNow out-of-box functionalities. They do not often work together. Customers do not understand, when to use portal and when core system.

- **How customers see the importance of portals?**

Customers expect much from the portal. Depends from the customer, some customers have bad experiences from bad portals, which won't work at all. Some customers have positive experiences for good portals. It also depends have portal change is communicated within the customer organization and how users are being encouraged to use the portal.

Other:

How to monitor the usage of the portal? Using metrics, such as how many person has created a ticket via portal.

- Which kind of professionals are typically present in the designing phase from Sofigate and customer side?

Appendix B - Interview 2 memo

THESIS 2016

Memo

Feb 15, 2016

THESIS INTERVIEW

Place Sofigate Office

Time Feb 15, 13.00 – 14.00

Present Atte Uppala

Sofigate Project Manager B

- **How design process is typically handled with the customer?**

  New customers:

  New customers are being proposed portal based on different reasons, such as usability, efficiency and users to feel empowered. Some example implementations are being presented to the (screenshots) customers, if the customer has agreed so.

  Some customers do not care what elements and functionalities include to the portal → Sofigate offers some kind of base visuals → shown to the customer → small adjustments → implementation.

  End-users should be involved to the conversation more. Furhermore, more visual examples should be created for showing to the customers, so they could choose one to match their needs the best.

  Plan created by marketing agency:

  Marketing agency/other partner has created visual illustration → Mockup/plan shown in the Portal design workshop → Started to develop

  Cons of marketing agency plan

  These projects are expensive and marketing agency cannot design the mock up from ServiceNow side. Their solutions does not often fit to ServiceNow.

  Example marketing agency projects:

- Customer X

- Customer Y
- Customer Z
- Customer B

- **How customer portals are being planned? Does Sofigate create design documentation? Who designs the portals and how?**

Marketing agency or Sofigate.

Process: Plan portal functionalities → mock up → checked again together → possible adjustments and implementation

- **Which kind of professionals are typically present in the designing phase from Sofigate and customer side?**

Customer:
Nowadays: technical owners, marketing and communication personnel, process responsible persons and sometimes marketing agency representatives.

In the future: Different end-users.

Sofigate:

Nowadays: Developer and project manager.
In the future: Additionally visual planner.

- **Which are the most typical elements and functionalities that customers want to their portals?**

IT, financial management, HR services, assistant services, news, instructions, knowledge base, product ordering, chat, incident, different forms to report different problems and monitoring tickets (my tickets).

In the future possibly password reset function.

- **How customers see the importance of portals?**

The more customers serve themselves, more effective and cost efficient it will be.

Appendix C - Interview 3 memo

THESIS 2016

Memo

Feb 16, 2016

THESIS INTERVIEW

Place	Sofigate Office
Time	Feb 16, 14.00 – 15.00
Present	Atte Uppala
	Sofigate Project Manager C

- **How design process is typically handled with the customer?**

Depending on the situation, not conceptualized. Nowadays ServiceNow implementation is not done without portal. Portal is created for every new customer in addition to the base user interface.

Workshop:
Possible elements are being sketched with the customer. After that, usability, visuals and processes are being determined for example for ordered products. Marketing agency is sometimes involved to the planning of portal visuals, if customer wanted to outsource visual planning from other party. Process is typically iterative.

- **Which kind of professionals are typically present in the designing phase from Sofigate and customer side?**

Sofigate: project manager and developer.
Customer: whoever they have named to be there.

In the future, additionally from service designer Sofigate.

- **How customer portals are being planned? Does Sofigate create design documentation? Who designs the portals and how?**

Documentation: Typically Word document, which incorporates specifications of the portal elements, styles, processes. Mockup made by Powerpoint. Additionally project plan documentation.

In the future, potentially prototype user interface (HTML or prototyping tool) if the plan takes under 1 or 2 days.

- **Which are the most typical elements and functionalities that customers want to their portals?**

Requests, service catalogue, news, links to other services (intra), several other services linked within ServiceNow, contact information (service desk), reports and contact requests.

- **What kind of things are challenging for you and customers, when designing portals?**

Sofigate and the customers do not have typically competences on usability and visual sides. Any of Sofigate personnel do not have experience of those subjects. Marketing agencies provide visuals and mock ups, which are difficult to implement into ServiceNow.

- **How customers see the importance of portals?**

Most of the users prefer to use portal instead of core user interface. Portal seen very important. ServiceNow is one of the most important elements of IT and portal can be a metric of IT. In the end user aspect everything needs to be simple in the portal. At the background there might run complicated processes, which does not matter from customer point of view. Customer needs to check the status of the requests, which is one of the most important features of the portal.

Other:

Nowadays customers don't know what is incident so portal designers need to figure out alternative terms such as contact request. Customer often gets confused between terms incident and service request.

Portal needs to be branded, so users would feel that they are conducting business within same organizations site. Service designers could help with this sector.

Appendix D - Interview 4 memo

THESIS 2016

Memo

Feb 16, 2016

THESIS INTERVIEW

Place	Sofigate Office
Time	Feb 16, 10.00 – 11.00
Present	Atte Uppala
	Sofigate Project Manager D

- **How design process is typically handled with the customer?**

Typically the need for portal comes from customer.

In the sales stage, example pictures are being shown to the customer. Project manager and developer are present. From customer, there is always the same staff present. Service designer have never been involved, only naturally visually talented people. If the visuals are ordered from marketing agency, their representatives are involved. Their solutions does not often fit to ServiceNow, which increases costs and difficulty of the project.

The pieces for the portal are being mapped together with the customer. Layout of the portal is typically illustrated and what kind of objects, images and pages are included to portal. Powerpoint has been used as a tool for this and it is used as a specification document type as well. Flap board is used for showing the illustration of the portal and further developing it. Sometimes marketing provides input for the colours and pictures in the portal. Sometimes customers provide a layout, which is further improved together.

During the workshop participants determine, which kind elements are included to the portal. Based on those, further adjustments are being made. Customers often change their mind during the project.

- **How customer portals are being planned? Does Sofigate create design documentation? Who designs the portals and how?**

Powerpoint document taken from previous project often works as project plan document. It will only be modified to match the current project. Document contains work estimates, project content, its steps, roles and responsibilities.

- **Which are the most typical elements and functionalities that customers want to their portals?**

Incidents, list of own tickets, order catalogue and lists related to it, news, knowledge base, search functionalities.

- **What kind of things are challenging for you and customers, when designing portals?**

For customers, it is difficult understand the entire structure of the portal and how different elements attach to each other. Navigation is difficult to understand for customers. Customers do have sometimes too many goals for the portal.

For Sofigate, ServiceNow restricts some of the functionalities that customers would want to have in the portal. Elements are often too difficult to implement with ServiceNow, which increases costs significantly. Sofigate does not have visual competence. Often portal main pages become crowded with information.

Other:

In the past for IT personnel, the usage of portal is easy. End-user aspect is not taken into account. Portals are often created from IT aspect, which makes them confusing for non IT users. Nowadays portals can be designed pretty simple. Creating simple and branded portals is difficult. Usability is now a trend also.

Aspects for thesis:
Create a design process with clear steps. User cases possible created by role.